

ASSOCIATIONS BETWEEN HUMAN-ANIMAL RELATIONSHIP
QUALITY, DISPOSITIONAL EMPATHY, AND PROSOCIAL BEHAVIOR



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This presentation is dedicated to my sister, Miriam Ruth Diamond, who was the first to teach me the importance of being kind to all living things. Miriam devoted her entire life to the advocacy and healing of plants and animals, including humans. Her spirit of love and empathy remained throughout this week.

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ASSOCIATIONS BETWEEN HUMAN-ANIMAL RELATIONSHIP
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The primary intent of this study was to evaluate a model specifying associations between pet relationship quality and prosocial behavior tendency, mediated by empathy. For the purposes of this study, empathy was defined as a multidimensional experiential process consisting of both cognitive (perspective taking) and emotional components (compassion and personal distress). In addition to testing the hypothesized model, research questions were posed concerning the possible effects of five variables (social desirability, subjective well-being, age of participants when their emotionally closest pet relationship occurred, type of pet to which participants were emotionally closest, and participant gender) on the associations among the five variables in the hypothesized model.

Our limited-survey-size undergraduate college students completed inventories assessing the five variables in the hypothesized model, pet relationship history, and demographic information; 174 cases were included in the analyses. Results showed that none of the three component-data research questions' variables were associated with any of the variables in the hypothesized model, and neither of the two categorical-data research questions' variables produced differential model effects.

Structural equation modeling procedures indicated that the hypothesized model did not fit the data well. Therefore, this model was altered and re-analyzed, then tested and analyzed again. The resulting model fit the data very well. In this final model, pet relationship quality was not associated with any of the three components-of-competency (additionally, a direct association between pet relationship quality and personal behavior tendency was somewhat weak). Characteristics as predicted, perspective taking was strongly related to empathic concern, and empathic concern was related (although only moderately) to personal behavior tendency. Finally, no hypothesized source association between personal distress and personal behavior tendency was strongly supported.

It was concluded that the three components-of-competency used in this study may predict personal behavior better than does pet relationship quality. It was also assumed that teaching competency skills is a valuable tool for parents raising children, and may be an effective component of psychotherapy training, psychotherapeutic consultation, and psychoeducational programming on the humane treatment of animals.

CHAPTER I INTRODUCTION

Nature of the Problem

The experience of Finnish and English children during many years has shown that children brought loneliness to mind as early as five years not only every kind of animals, but also were hard to see another (Angell, 1994).

As declared in Angell's statement in 1994, for over a century, it has been observed that a strong relationship with an animal not only benefits the animal being cared for, but also appears to increase the likelihood that the animal caretaker also will act in a compassionate or prosocial manner toward other humans. However, while this notion has existed for over one hundred years and is widely accepted among the general public (Kornis & Beck, 1994)—probably because it appears to be inherently logical—there is scant objective support for such a claim. Of the relatively few empirical investigations of the effects put forward that caretakers, only a handful have focused on how these effects might correspond to caretakers' reported feelings toward other people, and only one of these has additionally examined the possibility of increased prosocial behavior.

Establishing a link between a strong relationship with an animal and observed prosocial behavior would have important implications for the use of animals in psychotherapeutic, psycho-educational, and child-development situations, to name a few. Consequently, the current practice of using animals as an additional therapeutic

intervention with children and adults taking a *perspective* (e.g., provide delinquents, violent criminals, domestic violence perpetrators, children with autism) would be based on empirical evidence other than compassion. Furthermore, children in general might be taught to think about relationships with pain or those whom to that they would be more likely to develop empathy and prosocial behavior. (Indeed, although there are those who already follow this course of action, the availability of the practice has not been scientifically substantiated.) Additionally, raising programs that teach children and adolescents the humane treatment of animals (e.g., the National Association for Humane and Environmental Education's *People and Animals* curriculum, Society 4, Melbourne 1983, project N.E.E. of the Western Regional Environmental Council, 1986, *Openness*, *Queensland-LTA's* *Guides*, 1993, numerous programs sponsored or conducted by local humane societies) would have stronger support for the validity of their efforts.

Thus, the principal aim of this study was to test the hypothesis that *empathy* exists between experiencing a quality relationship with an animal and increased *prosocial* behavior mediated by an increase in other-directed *empathy*. For the purposes of this study, *empathy* was conceptualized as a multifaceted construct consisting of an *intra* cognitive reaction (taking another's perspective) followed by an emotional response comprised of both *prosocial* other-directed feelings (sympathy, concern) and *antisocial* self-oriented reactions (personal distress, *aversion*) (which will be examined later) shows that, when level of perspective taking is high, the *antisocial* response is predominantly negative-averse, which, subsequently, often leads to prosocial behavior. Alternatively, when perspective taking is low, the primary emotional reaction is *personal*

distress—which frequently does not result in prosocial behavior. Figure 1 is a schematic of the model that was evaluated, showing how the three aforementioned domains of empathy (perspective taking, empathic concern, and personal distress) might hypothetically mediate an association between the quality of a relationship with a pet and prosocial behavior. The various components of this model are explained in that order:



Figure 1
An Hypothesized Model of Pet Relationship Quality, Empathy, and Prosocial Behavior

A study of the relationship between a quality relationship with a pet and both other-directed empathy as well as prosocial behavior necessitates an in-depth understanding of the theory and research within two distinct domains. The first domain concerns the psychological constructs of empathy and prosocial behavior, along with empirical evidence suggesting that the former often results in the latter. The second domain includes research on the various benefits of owning and caring for domesticated animals, and especially those related to caring, psychological benefits of increased empathy toward other people and increased prosocial behavior. Finally, it is also

importance that a theoretical construct be delineated to represent the possibility of a reciprocal link between a strong relationship with an animal, increased empathy toward other people, and increased prosocial behavior.

Empathy

History of Empathy

The term *empathy* was coined by Titchener (1895) as a derivation of *Einfühlung*, a construct involving the projection of feelings into others, which originated from 18th century German philosophy. Titchener defined empathy as a “process of harmonizing objects, of reading or feeling ourselves into them” (Titchener, 1894, p. 417), in other words, empathy is a process comprised of an internalized reading of another’s emotions followed by a projection of these emotions onto the other person. Mind (1934) added a cognitive component to the construct, contending that in addition to the emotional element, empathy also involves a capacity to intellectually understand another’s experience.

Although empathy quickly became an adopted theoretical construct in many forms of psychotherapy (Egan & Hill, 1994), it was Carl Rogers (1949, 1950, 1957, 1959) who was largely responsible for solidifying its systematic empirical study. Consequently, empathy became an important concept in other fields and sub-fields, such as sociology (e.g., Kossman, 1942), child-development (e.g., Hoffman, 1971, 2000), education (e.g., Rogers & Fiske, 1971), prosocial behavior (e.g., Batson, 1981, 84), and human relations (e.g., Adams, 1962) to name a few.

Defining Empathy

In spite of the tremendous theoretical and empirical attention to empathy and its significance in psychological and indeed all human interactions (Davis & Hall, 1994), there are almost as many definitions of empathy as there are researchers who have studied the concept. Nevertheless, as Davis and Hall (1994) indicate, most conceptualizations of empathy can be placed into one of three relatively subsequent groupings. One grouping defines empathy as a personality trait—a stable, innate ability (e.g., Feshbach, 1975; Hoffman, 1982a, 1984, 2000; Rogers, 1969). Another classification treated conceptualizes empathy as a psychological state that is specific to certain situations (e.g., Eisen-Langman, 1988; Rogers, 1949, 1951, 1957, 1959). A third grouping views empathy as an experiential process involving at least two stages (e.g., Davis, 1980, 1983a, 1983b; Chartrand, 1983; Kahn, 1984) that may or may not incorporate trait or state elements (Davis & Hall, 1994). In response to the disagreement as to the manner about how to define empathy, Davis and Hall (1994) propose that the terms *dispositional empathy* (trait), *empathic experience* (state), and *empathic process* (multi-stage process) should be used instead of empathy in order to indicate which specific conceptualization method is being used.

The Nature of Empathy

Beyond the various ways to define empathy, there also has been considerable debate as to its theoretical composition. Again, there are three basic schools of thought about the nature of empathy (Davis & Hall, 1994). According to the first viewpoint, it is conceptualized as being predominantly emotional (e.g., Feshbach & Roe, 1968;

Marshall & Epstein, 1972). A second group believe it is predominantly a negative phenomenon (e.g., Baruch-Levenson, 1962, 1981; Fugère, 1967). Finally, some contend that empathy is comprised of both affective and cognitive elements (e.g., Davis, 1980, 1983a, 1983b; Davis, Furr, & Kross, 1984; Hoffman, 1977, 2000). At present, the latter view has received the most empirical support (Davis & Furr, 1984; Chabrous, 1983) although there still is great disagreement as to whether the cognitive and emotional factors are separate and distinct (e.g., Chabrous, 1983), or integrated and inseparable (e.g., Fugère, 1967). Additionally, there is considerable debate as to which specific emotional and cognitive sub-components are involved when someone experiences empathy, as well as the conditions under which they are activated (e.g., Baron, 1987a, 1981; Baron, Fehr, & Schreindor, 1987; Baron, Fehr, Schreindor, & Pridmore, 1987; Davis, 1980, 1983a, 1983b; Hoffman, 2000; Johnson-Cramer, & Beutner, 1983).

The present study uses the definition and conceptualization of empathy developed by Davis (1980, 1983a, 1983b) because it encompasses many of the elements of other more narrow formulations and has accumulated strong empirical support. According to Davis (1980, 1983a, 1983b), empathy is a set of cognitive and emotional reactions experienced in response to another person. Thus, empathy is a multidimensional phenomenon that that is triggered at specific situations (and thus is also a personality trait) as an experiential process involving both negative as well as affective components. The initial reaction on the part of the observer may be either cognitive or affective. The latter reaction consists of taking another's perspective, which involves understanding what the other person is probably thinking and feeling, as well as realizing how the other person is

emotion might affect this person. In the case of the latter response, an uncomfortable emotional reality is experienced by the observer, which Davis calls *personal distress*. Perspective taking is positively correlated with empathic concern, which is a corresponding other-focused feeling of warmth and compassion (Davis, 1983). On the other hand, personal distress is inversely associated with empathic concern (Davis, 1983), implying that they are mutually exclusive responses. As would be expected, however, there is some overlap between empathic concern and personal distress (Davis, 1983), as both are emotional elements of the same construct (empathy) and each can be precipitated by the same situation. Research issues relating to the conceptualizations of empathy are further discussed in the section focusing on the connection between empathy and prosocial behavior.

Prosocial Behavior

In its broadest definition, *prosocial behavior* is anything that a person does more or less voluntarily within a prosocial context of helping another person. By this definition, behavior is considered prosocial regardless of whether or not the person performing the act wants to gain something in return of the action, as long as the primary intention is to aid the recipient. Alternatively, even if a behavior does not actually benefit the target person, it still may be definitively prosocial. For example, an attempt to save someone's life may not succeed, but since the intent was to help, the attempt is considered prosocial. This conceptualization of prosocial behavior also does not specify the level of distress experienced by the targeted recipient or the prior relationship between the helper and the recipient. In other words, a child helping her or her parents by washing dishes and a

viewer who sees a stranger from a house fire or both demonstrating prosocial behavior—even though the two situations are very dissimilar.

The majority of research on the psychological antecedents, motivations, and conditions that promote prosocial behavior, however, is based on research more restricted definitions of prosocial behavior. This research most often involves studying how people respond to distressed individuals who are experiencing a moderate or “high degree of” emotional distress due to an urgent or emergency situation (see Eisenberg & Miller, 1987; Hoffman, 2000; Schaller & Cialdini, 1988; Salt, Dillard, Soenen, Kim, & Wright, 1993). This narrower interpretation differentiates the construct of prosocial behavior from the superordinate concept of social support—which includes various like helping, caring, comforting, nurturing, sharing, and teaching that occur within social networks such as the family, church, school, or work (Eisenberg & Miller, 1987; Newscomb, 1998; Vaux, 1984, 1986). Although the differences between the two concepts are often blurred, or even prosocial-synonymous (e.g., Eisenberg & Miller, 1987; Trope, Collins, & Enders, 1994), as is implied by the nature of prosocial research just identified, they differ in at least three ways. First, prosocial behavior is primarily voluntary, whereas social support often involves transactional expectations such as *quid pro quo*, reciprocity, obligation, or contractual features that will raise questions whether the behavior is purely voluntary. Second, prosocial behavior usually occurs between people who do not know each other, whereas social support clearly takes place between friends, acquaintances, or family members within social networks. Third, prosocial behavior is most often an act of assistance given to someone in distress (often in an emergency situation), whereas social

subject can be administered to anyone (blindfolded or not) and to any situation (subject or not).

One advantage of studying prosocial behavior using a relatively narrow conceptualization of what constitutes prosocial behavior, and doing so under fairly structured/laboratory conditions, is that it allows researchers to control as many variables as possible so that experimental error is minimized and the validity of findings is maximized. However, conducting research in this manner tends to curtail the ability to generalize outcomes to other, more naturalistic, situations. Therefore, some researchers are beginning to widen both the scope of the definition of prosocial behavior and the conditions under which it is studied. Some of this research is reviewed in the next chapter.

In their efforts to identify the specific motivators for prosocial behavior, researchers often distinguish between *egoistic* (self-serving) and *altruistic* (selfless) prosocial behavior, although there is considerable debate as to what these two terms mean. For instance, some researchers (e.g., [Das-Tell, Standage, & Karra, 1983](#); [Cialdini, 1984](#); [Baumeister, Tesser, & Sprou, 1991](#); [Cialdini, Baumeister, & Kowalski, 1987](#); [Baumeister, 1988](#); [Baumeister & Howard, 1982](#)) claim that prosocial behavior is *egoistic* if the helper volunteers receiving a reward (or avoiding a cost or punishment) that is external (e.g., giving public praise or avoiding a reprimand, receiving monetary reward or avoiding fines). On the other hand, if the helper only expects an internal reward (such as self approval) or the avoidance of an internal cost (such as guilt or shame), the prosocial

behavior is considered altruistic.¹ Otherwise, e.g., Darwin (1876, 1891, 1896, 1944) assumed that species possess tolerance towards those behaviors that are performed with the prospect of receiving any kind of reward or avoiding any type of cost, whether or not the reward or cost is intrinsic or extrinsic. Purely altruistic behaviors, then, are assumed without expectation of any kind of reward whatsoever and regardless of any personal costs involved.²

The Relationship Between Empathy and Prosocial Behavior

At first glance, the distinction between *empathy* and *altruism* in situations of prosocial behavior might appear to be irrelevant to the present study, since both types of motivation lead to prosocial behavior. However, in the body of research on the antecedents of prosocial behavior, the construct of *empathy* is most often associated with altruistic prosocial behavior (regardless of how it is defined), whereas it is usually not implicated as an antecedent to egoistic prosocial behavior (Eisenberg & Miller, 1987). Given the wide variation in definitions of the construct of *empathy* and its correlates (as reflected earlier), it is not surprising that there also is much disagreement as to whether or not *empathy* is related to prosocial behavior, and, if it is, what factors or mechanisms are involved and what sequence they follow.

¹Smith (1976) goes so far as to additionally require "good will" (arising from the actor) (p. 14) in his definition of altruism.

²This latter definition of altruistic behavior does not exclude instances where a reward (intrinsic or extrinsic) is subsequently received by the helper, as long as the original intention was to relieve the recipient's distress. Obviously, it is very difficult to experimentally prove the lack of an expectation of reward.

Two major theoretical positions attempt to describe the relationship between empathy and prosocial behavior: the negative state relief hypothesis and the empathy-altruism hypothesis. The negative state relief hypothesis (Cialdini, Darley, & Vincent, 1973; Cialdini & Kenrick, 1974) postulates that when a person reacts empathically to another person who is in need of assistance, the potential helper experiences sadness, sorrow, or depression (sometimes called *empathic arousal*, e.g., Hoffman, 2000). This negative mood state (which is differentiated from other negative mood states, such as anger, fear, agitation, or anxiety) is unpleasant, so the victim is helped in order to relieve the helper's—rather than the victim's—distress. Because reducing the victim's suffering is secondary to alleviating the potential helper's own discomfort, if the potential helper can easily avoid giving assistance to the victim, he or she will usually do so, as this action also tends to relieve the volunteer's depression.

Most who adhere to the negative state relief hypothesis characterize it as an egoistically based process (e.g., Baumeister, Cialdini, & Kenrick, 1981; Cialdini, Schaller, Roustan, Apsel, Felix, & Bauman, 1982; Monson, Baumeister, & Cialdini, 1984; Piliavin, Dovidio, Gansman, & Clark, 1980; Schaller & Cialdini, 1983; Schwartz & Howard, 1982). Because the motivation behind the assistance given by potential helpers is to ease their own distress rather than the victim's distress. Others (e.g., Hoffman, 2000; Knipfowicz, 1982) disagree, contending that the helper's act is altruistic because the helper acts primarily to relieve the victim's distress rather than his or her own. In support of this claim, Hoffman (2000) cites evidence (e.g., Baron & Shaw, 1976; Baron & Wicks, 1989) that helping in need-of-itself does not necessarily relieve the helper's

desires—especially if the help given does not relieve the victim's desires, whereas providing assistance that does relieve the victim's desires usually elicits the helper's desire as well.

The originally altruistic hypothesis originated in the late 1970s when C. Daniel Batson and his colleagues (Coke, Batson, & McAlevey, 1974) proposed a two-stage model to explain what motivates people to assist others who are in need. This model posited that when someone perceives another person is distressed from the other person's perspective, an emotional response of empathic concern follows, which increases the likelihood that the observer will lend assistance to the person in distress. The two-stage model was later expanded into a three-path model (Batson, 1987a), which posits that prosocial behavior can be motivated in three different ways, only one of which can be reciprocal. All three paths commence with the negative process of perceiving that another person needs help. At this point, the first path is contingent if the perceiver expects that by helping, he or she will receive an external or internal reward or avoid an external or internal punishment. If the prosocial benefits of helping outweigh the costs involved (such as helping or not helping), assistance is given or another person is advised to give help. However, if the costs/benefits ratio favors not helping (i.e., the costs are too high), help is not given.

The second path of the three-path model is motivated if, after perceiving another in need, the perceiver experiences "unpleasant emotions of personal distress" (Batson, 1987a, p. 83). Relief from these very uncomfortable feelings can be accomplished by helping, leaving someone else help, or escaping the situation (not helping), depending on which

action is the action to accomplish. Process of behavior that individuals form either the first or second path is considered by Batson (1987a) to be egoistically motivated because the values of the observer's own distress or who primarily motivates the helping behavior.

Lastly, after realizing that another person is in need of assistance, the third path is involved if the perceiver adopts the perspective of the person in need. Adopting another's perspective (also termed perspective taking) is a cognitive process whereby the perceiver comprehends (consciously or not) what it would be like to be in the place of the person who is in need. In other words, the perceiver understands the impact that the distressed situation might have on the person in need (although, as mentioned, this process could be at an unconscious or preconscious level). Taking another's perspective leads to the experience of empathy, which Batson (1987a, 1991) considers to be an other-oriented, spontaneous emotional response that is not differential and that incorporates feelings such as compassion, sympathy, and tenderness. In most instances, the experience of empathy by the perceiver produces a purely utilitarian (altruistic) motivation to help the person in need. Batson (1987a, 1991) hypothesizes that process of behavior resulting from empathy is altruistically motivated because the helper's intent is to alleviate the distress of the person in need rather than gaining any kind of intrinsic or extrinsic reward, avoiding any internal or external type of punishment, or reducing personal distress.

Batson (1987a) formulated three hypotheses based on the theoretical assumptions underlying the three-path model. The first hypothesis states that empathy and personal

distress are independent other-oriented? emotional responses to someone in need. The second hypothesis posits that taking the perspective of a person in need results in feelings of empathy toward that person. The third hypothesis—the empathy-altruism hypothesis—proposes that when a person experiences empathy, it produces an altruistic motivation to assist the person in need.

Baltes (1971a) does not consider the second hypothesis to be as important as the other two, because its verification would not provide sufficient grounds to prove that prosocial behavior sometimes is altruistically motivated. On the other hand, in order to establish the existence of altruistically motivated prosocial behavior, it is both necessary and sufficient to validate the first and third hypotheses. With regard to the present study, however, the third hypothesis of the three paths model is the only one that is relevant.⁴

Although the empathy-altruism hypothesis is the most difficult of the three to test, because motives must be inferred from observed behavior rather than measured directly, considerable evidence has accumulated substantiating its validity. For example, using meta-analysis to combine seven classification groupings of over 70 studies, Eisenberg and Miller (1977) reported that most of the common correlation coefficients were significant, although low. They concluded that the coefficients would have been higher if they had

⁴Because views personal distress as other-oriented because it is preoccupied by, and is as reflexive to, the person in need.

⁵Indeed, Eisenberg (1971a) points out that empirical verification of the third hypothesis of the three-path model also provides support for the first hypothesis, because if the type of motivation produced by empathy is different than the type of motivation evoked by feelings of personal distress, then empathy and personal distress must be functionally independent.

excluded studies with weak or questionable quality of data had been less variable in the way sympathy was measured, of the ways in which prosocial behavior and empathy were measured had more frequently been congruent with each other, and if measures of both empathy and prosocial behavior had been aggregated more often.

Moving to more different levels, some researchers (such as Eisenberg and her associates (e.g., Carlo, Ains, & Bateson, 1999; Carlo, Eisenberg, Tynan, Surlan, & Speer, 1991; Eisenberg, 1986; Eisenberg, Fabes, Miller, Patis, Shell, Maity, & Shen, 1990; Eisenberg, & Miller, 1987; Eisenberg, Miller, Schaffer, Fabes, Patis, Shell, & Shen, 1989), do not subscribe exclusively to either the separate state-label model or the sympathy-altruism hypothesis. Instead, they agree with some aspects of both models, although they frequently use slightly different terminology than either model. For example, rather than using the term *empathy* to describe the motivation for prosocial behavior, they use sympathy, defined as "other-oriented concern or concern for another" (Carlo, Eisenberg, Tynan, Surlan, & Speer, 1991, p. 108).¹ Further, although this definition at least partially implies a dispositional component (person), it is more closely aligned with the sympathy-altruism model than the Negative-State Relief model. On the other hand, Eisenberg and her colleagues define altruism as

voluntary behavior not motivated by the expectation of external rewards or by the avoidance of external emotional costs (which includes) prosocial behavior motivated by the desire to adhere to internalized principles (the

¹In earlier work, Eisenberg and her associates (e.g., Eisenberg, Miller, Schaffer, Fabes, Shell, & Shen, 1989; Eisenberg & Sanyal, 1987) differentiated between sympathy and empathy. Later, however, these researchers have used the term sympathy as synonymous to empathy (e.g., Carlo, Eisenberg, Tynan, Surlan, & Speer, 1991).

almost all which may be associated with self-confrontation) (Cialdini, Evansberg, Tesser, Swenson & Spert, 1991, p.498)

This definition of altruism is almost identical to that which is stated by the Negative-State Relief model, whereas the empathy-altruism model does not include internal rewards (or avoided costs) in its definition of altruism (Batson, 1987a, 1991)

Another area of disagreement among researchers studying the relationship between empathy and prosocial behavior concerns the role played by personal distress. Hoffman (1987, 2000), Karlymowska (1982), and Schaller and Cialdini (1988) contend that personal distress is an integral aspect of empathy and that a moderate level of distress is necessary to produce the impetus for behaving in a prosocial manner. Davis (1983a, 1983b, 1983c) and Evansberg (2000) agree that personal distress is indeed one of the components of empathy, but posit that it attenuates—rather than promotes—the likelihood of subsequent prosocial behavior. Finally, Batson (1983a, 1988) argues that personal distress and empathy are mutually exclusive, but concurs with Davis (1983a, 1983b, 1983c) and Evansberg (2000) with regard to the limiting effect personal distress tends to have on prosocial behavior. Nevertheless, despite the many differences among researchers concerning the nature of personal distress, virtually all of them (e.g., Batson, 1991; Batson, Dutton, Aronson, Berkley & Bush, 1984; Cialdini, Evansberg, Tesser, Swenson & Spert, 1991; Davis, 1983a, 1983b, 1983c; Evansberg, 2000; Fabes, Miller, Polla, Small, Morley & Stone, 1990; Hoffman, 1987, 2000; Karlymowska, 1982; Levine & Bauman, 1988; Schaller & Cialdini, 1988; Tan & Batson, 1982) agree that at the level of personal distress becomes too high, prosocial behavior is not likely to occur unless

helping is the only means of reducing, or eliminating, the distress (such as when escape from the distress-causing situation is very difficult)

Taking into account all of the issues surrounding the manner in personal behavior, it is apparent that, relative to the present study, it is not as important to determine whether the motivation for personal behavior is altruistic or egoistic, or even to choose a theoretical model that would optimally conceptualize the antecedents to personal behavior. Rather, the central issue concerns the manner in which empathy is defined, and whether or not the selected definition of empathy and any subordinate elements are indeed proximate to personal behavior.

Recall that the present study uses Davis's (1980, 1983a, 1983b, 1984) multidimensional conceptualization of empathy, which consists of initial other-related cognitive response (perspective taking) that is followed by an emotional reaction that is either very uncomfortable and self-focused (personal distress), or other-oriented and marked by sympathy or sympathy (empathic concern). Taking another's perspective has been shown to correlate positively with feelings of empathic concern and negatively with personal distress (Davis, 1980; Seif, Dillard, Soenens, Kan, & Singh, 1997). Although personal distress and empathic concern may be experienced simultaneously, the levels of each are usually inversely proportional (Davis, 1984a). When level of personal distress is high (and level of empathic concern is therefore low) helping behavior may or may not occur depending on whether escape from the situation is difficult or easy (Batson, 1991; Cialdini, Baumeister, Tregler, Soenens, & Spere, 1991; Davis, 1983a, 1983b, 1984a, Baumeister, Finken, Miller, Finken, Staff, Morley, & Aron, 1991). Conversely, when level of

empathic concern is high (and level of personal distress is low), prosocial behavior is very likely to follow (Ainslie: *Does Loving Callousness Drive A Kindness?* 1980; Batson 1980; Batson, Duncan, Adelman, Buckley, & Clark, 1981; Batson, Dwyer, Brown, & Batson, 1988; Batson & Shaw 1991; Batson & Wilson 1994; Batson & Winko, 1994; Clark, Wordenberg, Torgert, Salovey, & Spont, 1991; Clark, Isenura, & McElwain, 1978; Davis, 1983a, 1983b; Darden, Allen & Schneider, 1990; Fein, Batson, Pattershah, McCarthy, & Varnay, 1985; Fei & Batson 1987)

Finally, although taking another's perspective is related to empathic concern, there is little empirical support for a direct relationship between perspective taking and prosocial behavior (e.g., Batson, 1987a; Clark, Allen & Schuman, 1999; Batson (1987a) postulates that perspective taking must occur before empathic concern can be experienced, and therefore perspective taking is only related to prosocial behavior when perspective taking is followed by empathic concern. This hypothesis is strongly supported by a study by Jeff Gelfand, Batson, Kim, and Wright (1982). Thus, it is likely that perspective taking is a necessary but insufficient precursor to helping behavior: whenever perspective taking and empathic concern occur in sequence, they create the necessary and sufficient conditions for the generation of prosocial behavior.

While there is relatively strong research evidence showing that empathy (by most definitions) often results in prosocial behavior, an empirical connection also must be established between a caring relationship with a pet and an increase in empathy on the part of the caregiver. If this association were shown to exist, it would lend plausibility to the central theme of the present study: that quality relationships with pets increase the

consider a capacity for empathy, which in turn leads to increased prosocial behavior by pet owners. The next task, then, is to further examine the research on the various positive impacts pet have on their owners, focusing especially on those psychological benefits of caring for or around that relate – either directly or indirectly, as we increase in capacity to empathize toward other people.

The Impact of Pets on Humans

As has already been pointed out, the notion that pet owners might have positive psychological impacts on their human counterparts is certainly not new. Animals were probably domesticated initially for utilitarian purposes, such as hunting or protection (Mansueti & Serpell, 1984), but archaeological evidence starts indicating that as far back as 12,000 years ago dogs were raised as pets for their companionship (Davis & Valla, 1978; Working Party/Committee for Science and Society, 1980). The ancient Egyptians are well known for their domestication of and reverence for cats, some 4,000 years ago (Gleadowitz, 1986; Serpell, 1986). Each of these examples highlight the importance that has been placed on the emotional bond between humans and animals throughout the history of humankind.

Remember more recently – In 1792 the Quakers extended the use of pets beyond work/companionship, using them as a mode of therapeutic intervention with mentally ill residents of the York Retreat in England. The Quakers assumed that if the patients living at the institution wanted to care for animals, they “might have self control by having dependents upon them less than themselves” (quoted as cited in Bernal, 1999, p.117). Contrasting to this view, in the early 1980s, child psychologist Boris Levinson began

publishing observed evidence of the effectiveness of using animals as an adjunct and catalyst to the psychotherapeutic process (e.g., Lavace: 1962, 1964, 1965, 1968, 1969, 1970, 1972, 1973), based on his use of his own dog, Rigley, to provide a more relaxed, natural, and less-threatening atmosphere. Initial reactions to Lavace's work were highly skeptical and dismissive, but by the beginning of the 1970s, numerous anecdotes were being published proclaiming the benefits of using animals with children in a variety of therapeutic situations (Carrick, 1983; Kold & Kold, 1987).⁴ Lavace (1978) came to believe that pets could reduce alienation and promote self-control, independence, self-esteem, and empathy in children. However, it was not until the early 1980s that empirical support began to accumulate for the use of animals as adjuncts to the therapeutic process (Pringle, 1992).

Substantive scientific support for the idea that pets benefit their human counterparts in any manner has developed only within the last 20 years or so, in studies that focused on both physiological and psychosocial outcome variables. Studies often include variables from both categories because the effects of pets on their human counterparts may well not be direct, but are being mediated by one or more intervening factors (Kruetz-Rock, 1994). However, it is much more difficult to identify empirically sound connections between human-pet relationship variables and psychosocial outcome variables than it is

⁴ Indeed, the editors of the journal, *Psyce*, referred to a footnote to an article about the use of a golden retriever in therapy (Anita Rodhe, 1966) that both Sigmund Freud and Harry Stack Sullivan usually had dogs in their respective offices.

for physiological outcome variables because the latter can be specified and measured much more accurately and reliably.

Probably the most well-known and respected experimental study on the physiological benefits of pet ownership was performed in 1960 by Frankman, Katcher, Lynde, and Thomas. This group of researchers found that owning a pet reduced the mortality of carding at least one year after the occurrence of a heart attack—a finding that has been corroborated by at least three other studies (e.g., Anderson, Beck, & Jennings, 1983; Frankman & Thomas, 1965; Foxrath & Gluckman, 1981). Due to the rigor of its design, it is now one of the most cited studies in this literature, and has prompted numerous other studies on the effects of owning and caring for pets.² For example, pet ownership has been correlated with reduced risk of cardiovascular disease (The Coronary Artery Project Suppression Trial (CAST) Investigators, 1989; Foxrath & Gluckman, 1983), reduced blood pressure (Allen, Monczak, Tomala, & Karpay, 1994; Egan, Rappaport, Longino, & Thomas, 1985; Frankman, Katcher, Thomas, Lynde, & Vincent, 1960; Katcher, 1965) and lower risk of alcoholism (DeBorja, & Kaddick, 1986), increased education (Wilson, 1991), less mobility restriction during retirement (Raine, Walter Tross, Bennett, Woodward, & Abemathy, 1997), fewer physical symptoms among the bereaved (Majors, Helander, & Eitz, 1987), and lower physician visits among the elderly (Riegel, 1998).

²Interestingly, Raine and Beck (1990) noticed that despite the growing interest in studying human-animal relationship effects, the quality of the research had barely improved since the strength of the findings is severely limited due to a lack of adequate funding.

As mentioned, physiological benefits of human-pet interactions could result from enhanced psychosocial well-being and vice versa. As with physiological variables, research efforts have revealed a wide range of psychosocial impacts that are associated with human-pet interactions. For instance, pet owners have been shown to have higher self-esteem relative to non-owners (Cohen, Willsen, Kuhl, & Nelson, 1985; Cohen, 1982; Monson, 1982; Rosenblum, 1984) while Puker Levy (1982) found that having a pet owner leads to reduce uncertainties and alienation. Pets also have been reported to reduce loneliness (Kush, 1984; Smith & McCann, 1989; Muech, 1984; Pavesi, 1990) by providing companionship (Kuhl & Kuhl, 1984), and to increase morale (Albert & Anderson, 1997; Garry, Sullivan, Marx, & Johnson, 1989; Lago, Delaney, Miller, & Gill, 1989; Sagart, 1991). Guitman (1981) revealed that pet owners participate less than do non-owners. Pet ownership has been associated with anxiety reduction (Wilson, 1988) and has been found to be inversely associated to depression (Garry, Sullivan, Marx, & Johnson, 1989). Pets often have been described as social facilitators (Hart, Hart, & Coombsworth, 1992; Bolten, Sanders, & Cobill, 1980; Bolten & Fack, 1984) because they provide a natural, nonthreatening focus for the initiation of conversation between strangers. In fact, Bolten (1987) found that pet owners spend more time interacting socially with others than do non-owners. Fack (1988) found that pets can increase social interaction among elderly nursing home patients, and it has been shown that service dogs increase the likelihood that strangers will approach and initiate conversations with persons who are in wheel chairs (Foley, Hart, & Bolte, 1988; Hart, Hart, & Sagart, 1988; Malar, Hart, & Sagart, 1989).

An increased number of studies assessing the quality of relationships between humans and their pets has led to the development of at least seven self-report inventories designed to assess this type of relationship (Langley, Siegel, & Derelski, 1996; Wilson, Norling, & New, 1987). Relationships-quality between people and their pets usually centers around the construct of emotional attachment, which is a concept commonly used in the child-development field (Larson, 1973). Indeed, human-pet relationships have been hypothesized as being similar to as in the relationship between human mothers and their children (Forsley, 1997). A strong emotional attachment to, or bond with, a pet is characterized by caretaking behaviors (such as feeding, cleaning up after, disciplining, teaching, grooming, and bathing the animal), spending time with the animal (e.g., playing with, talking to, petting and stroking, and sleeping near the animal), attitudes indicating that the pet plays an important role in the owner's life (such as companionship, confidence, member of the family, etc.), and positive feelings toward the animal (such as love, devotion, love, joy, protectiveness, and so on).

Very little research has focused on whether or not a quality relationship with a pet results in an increase in empathy on the part of the caretaker, and findings from these few studies are neither definitive nor compelling. Indeed, in the author's knowledge, only five published studies relate directly to this topic. First, in the pre-test phase of a study evaluating a year-long humane education program in a public school, Ausman (1992) found significant correlations between level of humane attitudes toward animals and level of human-directed empathy among fourth- and fifth-graders. Further, after administration of the intervention, Ausman (1992) found that as a group, those fourth- and fifth-graders

who received the humane education instruction had significantly higher levels of empathy than did those students who received no humane education instruction. Second, a follow-up study of the fourth graders from the Ashboro (1992) study was performed by Axelson and Waizer (1992) to assess whether the effects were maintained one year after the end of the initial study. As part of this follow-up study, Axelson and Waizer (1992) included an secondary measurement of the level and quality of participants' relationships with their pets (other than pet ownership only). These data were used as a covariate in all study analyses. Findings indicated that, when quality of relationship with pet was employed as a covariate, the experimental group demonstrated higher levels of human directed empathy than did the control group. Third, Pomeroy (1998) found that young children whose mothers indicated they had a close relationship with their pet had higher empathy scores than did those children whose mothers indicated they were not as attached to their pet. Fourth, Hyde, Rensick, and Larson (1992) found that college students who owned pets scored higher on measures of empathy and interpersonal trust, although the differences were only marginally significant. Finally, the most relevant study to the present study was performed by Valentin, Birme, and Santos (1999) who found that (a) children who owned dogs or cats were more attached to their pets than owners of other types of pets, (b) children owning dogs had significantly higher levels of empathy and prosocial orientation than non-owners, (c) children having the highest levels of attachment to their pets had significantly higher levels of empathy and prosocial orientation than children who were not very attached to their pets as well as children who did not own pets.

Clearly, the relationship between emotional closeness to pet and increased empathy toward other people has not been established to any defensible degree of certainty, indicating the need for further research on the topic. Additionally, participants in four of the five studies of this relationship consisted of children ranging from kindergarten through fifth grade, which poses a concern related to the measurement of empathy. Several leading researchers studying the development of empathy (e.g., Eisenberg, 1984; Eisenberg, 1975, 1982; Hoffman, 1963a, 1947b, 2000) question whether children younger than ten years old have fully developed the capacity for empathic responses incorporating both the intellectual and emotional aspects of empathy. The present study eliminates this potential problem by using participants who are young adults.

Theoretical Rationale for a Link Between Pet Care-Taking and Other-Directed Empathy

Assuming that a relationship does indeed exist between having a quality relationship with a pet and increased empathy toward other people, a theoretical basis for the connection must nevertheless be developed. Cognitive theory provides the most suitable theoretical framework for hypothesizing the various relevant psychological processes that likely occur between pet caretakers and their pets, and subsequently between pet caretakers and other humans. A brief overview of cognitive theory is now presented, followed by a delineation of how cognitive theory might apply to pet caretaking, and how pet caretaking could increase other-directed empathy—and thereby result in increased prosocial behavior.

Cognitive Theory

Cognitive theory is historically rooted in experimental efforts conducted by Aaron Beck in 1966 to establish empirical evidence for the psychoanalytic view of depression (Allford & Beck, 1987). Instead of supporting the psychodynamic formulations of depression as anger turned inward, however, Beck's studies consistently revealed evidence that appeared to refute the psychoanalytic stance (Beck, 1984; Leah, Beck, & Gogarty, 1987). After performing further experiments, Beck and his associates postulated that depression is characterized by an intense tendency toward a negative view of the world, including a severely negative self-concept, negative beliefs about personal experience, and negative expectations of the future. Thus, rather than resulting from a fixation drive, Beck and his colleagues concluded that depression is a function of negative processes going awry (Allford & Beck, 1987).

Cognitive theory has undergone many developments and refinements since its initial formulation. Furthermore, the theory has been expanded from its earlier emphasis on depression to a comprehensive explanation of all normal and abnormal psychological phenomena, and an extensive complement of psychotherapeutic interventions (Allford & Beck, 1987). It also accounts for concepts that are currently associated with other theoretical positions, such as the existence and nature of the unconscious, the evolutionary adaptation of the human organism to its environment, and the importance of therapist-client relationship variables in the therapeutic setting (Allford & Beck, 1987).

Current cognitive theory is predicated on 10 independent axioms from which all subsequent theoretical statements can be derived or deduced (Allford & Beck, 1987).

Recently, these models state that any given environmental situation (event) is interpreted by an individual using “meaning-making structures of cognition, learned behavior” (Allred & Beck, 1997, p. 11). Behaviors are partially genetically determined, but they also draw upon prior experience and are modified by the present context as an ongoing, interactive process. Thus, meaning has been constructed relative to a context, other psychological systems (such as emotions, motivation, behavior, and memory) are activated—often as a predictor or habitual configuration—or as an attempt to adapt to the situation. Individuals construct three types of schemas: those that relate to the self, those that have to do with one’s ongoing interaction with the surrounding environment, and those that pertain to the future (goals). Taken together, these three types of schemas are called the cognitive triad. Cognitive processing can take place at a preconscious level (unconscious, automatic, or automatic/cognitive), at a conscious level (intentional) cognizes that the individual is readily aware of), and at a metacognitive level (intentional cognizes that plans, monitors, and evaluates the use and development of schemas). All individuals are susceptible to constructing meanings that are distorted in specific and distinctive ways (cognitive distortions), which may result in some form of psychopathology. Each psychological disorder or syndrome can be identified by a particular pattern of cognitive distortions that are consistently made regarding one’s self, present experience, and future.

Cognitive theory maintains that emotions and behavior are directly dependent upon—and, theoretically, can be predicted by—the meaning that is attached to a given situation (Allred & Beck, 1997; Beck, 1988). Further, the theory proposes that particular

emotional reactions and behavioral responses are associated with specific and identifiable types of meaning representations (Allord & Beck, 1997; Beck, 1988). This proposition holds one look for normal and abnormal emotions and behavior.

Cognitive theory defines human personality in the term components of specialized, "relatively stable organizations of schemas, which account for the stability of cognitive, affective, and behavioral systems across time and situations" (Allord & Beck, 1997, p.77). These complex schema systems (which integrate some more complex patterns of other psychological systems) are equivalent to personality traits (Schiefel & Beck, 1987).

Human-Pet Relationship and Empathy from a Cognitive Theoretical Perspective

Based on cognitive theory, every time a person interacts with a pet, meaning is constructed using preexisting schemas, with meaning processing occurring continuously, continuously, or both. Depending on the nature of the resulting interpretation, other systems (affect, memory, motivation, behavior, etc.) are then activated. Each encounter reorganizes these schemas, specialized schema systems, and other psychological systems that relate to the cognitive processing of pet interactions.

Thus, theoretically, the more a person interacts with a pet in a caring or compassionate manner, the more his or her specialized schema systems (and associated psychological systems) that relate to empathy and compassion are strengthened. Since the cognitive skill of perspective taking is the first step in acquiring the ability to empathize, it follows that interacting in a caring manner with pets increases the caretaker's capacity to empathize with the pet by developing the pet caretaker's proficiency at taking the perspective of the pet. By interacting with the pet, the caretaker slowly learns to

understand, and even anticipate, the pet's wants and needs by interpreting the pet's intended communication cues.

This cognitive skill develops in much the same way as a mother who learns to understand the subtle differences occurring from the sounds of her two-year baby's cries and non-verbal cues. Mother begins not just use able to use language to convey their messages. Thus, mothers and pet caretakers have to learn a different kind of language involving non-verbal sounds, reflections, tone, and body language in order to understand the messages being transmitted to them. Mothers and pet caretakers often often become quite adept at deciphering meaning from the unique language of their ward, usually at a conscious level through a process of trial-and-error, and gradually developing into an intuitive, preconscious skill. The ability to take another's perspective without the aid of verbal cues may be valuable in terms of giving practical assistance in emergency situations, because people in crisis situations often do not clearly articulate what is wrong and how they wish to be helped.² Even in less critical situations, perspective taking ability can enhance the ability to build rapport, and hence, interpersonal cues—both of which are important elements of helping relationships (Rogers, 1949, 1951, 1957, 1959).

Another way in which mothers facilitate communication with their babies and young children is by using motherese, which is a universal language pattern characterized by short sentences, frequent word repetition, greater pitch range (i.e., higher average pitch), and exaggerated pronunciation, gestures, and facial expressions. Motherese has

²Indeed, they may not even be physically able to communicate their needs.

have shown us and in children's language development because it is easier to comprehend than normal adult speech (Murray, Johnson, & Peters, 1990). A study of the linguistic patterns used by dog owners with their dogs showed that when speaking to their pets owners predominantly spoke monosyllables (Mark Petrik, & Thomas, 1982). And although pets do not learn spoken language, they do learn to recognize words, body language, facial expressions, and gestures, so speaking—and responding—to them in monosyllables may well enhance communication in both directions.⁴

As the same time that pet-owners learn to understand the various messages their pet is communicating (taking the pet's perspective), they also develop related response patterns involving other psychological systems. For instance, taking the animal's perspective may frequently result in the caretaker feeling empathic concern for the pet and subsequently taking steps to address whatever it is the pet wants or needs. Therefore, from a cognitive theory perspective, understanding the pet's perspective (a cognitive ability) often activates the emotion of compassion (empathic concern) and frequently culminates in a helping action (prosocial behavior) directed toward the pet. And as was previously established, empathic persons (those who are characterized by high levels of dispositional perspective taking and empathic concern) often demonstrate other-derived prosocial behavior.

⁴Interestingly, monosyllables are also characteristic of some intimate relationships between adults (Beebe & Lundy, 1994) so it may also reflect close emotional attachments.

Study Hypotheses

The primary purpose of this study was to evaluate a model (see Figure 1, page 1) specifying the three components of empathy (perspective taking, empathic concern, and personal distress) mediating an association between pet relationship quality and prosocial behavior tendency. Because structural equation modeling was the statistical analysis procedure used, all hypotheses were stated using structural equation modeling language. Thus, the major study hypothesis was that the model as a whole would fit the sample data to a satisfactory degree. The other hypotheses consisted of a series of predicted associations among the variables within the model being tested. These hypotheses stated that there would be at least moderate-to-strong ($r \geq .70$) between: a) pet relationship quality and dispositional perspective taking, b) dispositional perspective taking and dispositional empathic concern, and c) dispositional empathic concern and dispositional prosocial behavior tendency. It was also predicted that there would be a moderate to strong association between dispositional personal distress and dispositional prosocial behavior tendency.

Additionally, the following research questions were explored: Do the variables of social desirability, subjective well-being, age of participant when their closest pet relationship occurred, the type of pet this closest relationship occurred with, and participant gender significantly relate to quality of pet relationship, trait perspective taking, trait empathic concern, trait personal distress, or trait prosocial behavior tendency, respectively?

CHAPTER II LITERATURE REVIEW

This chapter provides the literature relevant to the variables measured in this study. As the central theme of the present study is that high-quality relationships with pets result in increased dispositional empathy toward other people and, consequently, increased dispositional prosocial behavior, the ensuing sections on each aspect of this overall premise is reviewed. The first section examines research suggesting that increased empathy is associated with increased prosocial behavior. The second section reviews the literature on the potential aspects pet/human bonds, and is further subdivided into sections on physiologic benefits, psychosocial benefits, and studies suggesting that caring for pets results in an increase in other-directed empathy on the part of caretakers.

Research on the Connection Between Empathy and Prosocial Behavior

As discussed in Chapter I, there is much disagreement in the literature about how to define empathy. Although the predominant view is that empathy is comprised of both cognitive and emotional elements, even among those who adhere to a dual-component conceptualization, there is controversy concerning the precise nature, description, and labeling of its cognitive and emotional components, and conflicting views as to the manner of the relationships between these components. Furthermore, there is considerable disagreement about the way in which these elements of empathy relate to prosocial

behaviour. For example, some researchers and theorists (e.g., Batson, 1994; Davis, 1983a; Feshbach, 1975) contend that the elements of empathy relate to prosocial behaviour in a linear fashion while others (e.g., Cialdini, Allen & Anand, 1979; Cialdini, Schaller, Houlihan, Apsu, Fella, & Brown, 1982; Skiff, Gifford, Rogers, Kim, & Shalpin, 1988) argue that the nature of this relationship is nonlinear or multiphasic.

Empathy is defined in the present study as *emotional resonance* that arises in someone who is in need of assistance. It is comprised of an *other-oriented* negative component (*perspective taking*), an *other-oriented* emotional component (*empathic concern*), and a *self-oriented* emotional element (*personal distress*). These components are believed to occur in a linear manner, such that the negative appraisal response is experienced first, followed by the emotional reaction. The emotional response is thought to consist of a combination of both empathic concern and personal distress in relatively inversely proportional amounts. Higher levels of perspective taking are hypothesized to produce higher levels of empathic concern and lower levels of personal distress. Conversely, lower levels of perspective taking are hypothesized to produce lower levels of empathic concern and higher levels of personal distress. In terms of the relation between the emotional component of empathy and prosocial behaviour, it is presumed that, if the proportion of empathic concern is high relative to personal distress, the likelihood is high that prosocial behaviour will occur. Alternatively, if the proportion of empathic concern is low relative to personal distress, it is not likely that prosocial behaviour will follow.

Thus, in terms of reviewing research on empathy's relation to prosocial behavior, one would expect that higher levels of perspective taking would be associated with higher levels of empathic concern, which in turn should relate to increased prosocial behavior. Additionally, lower levels of perspective taking should be associated with higher levels of personal distress, lower levels of empathic concern, and lower levels of prosocial behavior. A considerable amount of research evidence supports this particular pattern of connections between trait perspective taking, trait personal distress, trait empathic concern, and trait prosocial behavior. Indeed, due to the sheer number of studies on this topic, only selected, representative studies are reviewed here.

A final note is in order concerning the nature of the empathy-prosocial behavior literature. As outlined in Chapter 1, a comparatively small amount of research has explored the dispositional, as opposed to situational, antecedents of prosocial behavior. Early attempts to isolate definitive personality traits that reliably predict different kinds of prosocial behavior across a multitude of situations has thus far proved to be an elusive endeavor. Bandura efforts have therefore taken a more-to-learn approach to this issue, as hopes that identifying specific situational precursors to prosocial behavior will aid in uncovering dispositional predictors of prosocial behavior. The organizing of the following literature review generally reflects this learn-to-learn strategy.

Initial research in this field largely focused only on the construct of empathy as a response to observing someone in need. In a classic series of experiments on perspective taking and empathic concern, Batson (1987) asked college student participants to observe a man undergoing what they thought was a painful medical procedure involving

the use of electrical currents to produce facial muscle tension (biofeedback). In each experiment, one-third of the participants were told to try to imagine how the man felt (perspective taking condition), while another third was instructed to pay close attention to the target person's movements (observing condition). The last third of the participants served as a control condition. They were told to imagine how the man felt, but were not given any information before or during the experiment to indicate that he was in pain. In each experiment, participants in the perspective taking condition tended to report higher levels of empathic concern and display more physiologic arousal than did those who were told to only observe movements or those in the control condition. Strickland concluded that taking the perspective of someone in a distressed situation increases both physiologic arousal and feelings of empathy. The importance of Strickland's research is not limited to his findings. Much of the research that followed used the same, or a similar, methodology of eliciting empathic feelings by having participants take the perspective of someone in need.

In 1976, Krebs performed another landmark study in an attempt to establish that feelings of empathy resulting from observing a person in distress lead to prosocial behavioral behavior. Krebs hypothesized that the more similar people feel they are to a person in need, the more they will identify with, and feel empathic toward, that person. Based on this assumption, Krebs varied the degree of similarity that observers perceived they were similar to the target person, thus varying the level of empathy felt about that person. Some participants in Krebs's study were led to believe that they were very similar to the target person, while others were given information indicating they were very

different from the person. All participants then watched a man about their same age playing roulette. Whenever the ball landed on an even number, the man received money, but whenever the ball landed on an odd number, the man perceived what appeared to be a painful shock. As predicted, participants who thought they were very similar to the man, reported feeling more negative towards him, demonstrated more physiological arousal when he got shocked or shocked, and offered to provide help more often than did participants who believed they were very different from the man. As with Berkoff's (1988) research, Kiehl (1975) used a direct and effective approach in inducing differing levels of empathy by changing participants' perceptual set toward the observed target. Additionally, of course, Kiehl (1975) provided some of the first empirical evidence of a relationship between measured empathy and prosocial behavior.

By the mid-1970s, the idea was emerging that empathy represented as a reaction to others as distinct is not a unidimensional construct composed of either emotional or cognitive elements, but instead a multidimensional process involving elements of both cognition and emotion. One of the earliest attempts to specify the subcomponents of a multidimensional view of empathy was performed by Davis (1980).

Davis (1980) believed that the superordinate construct of empathy involved cognitive perspective taking along with some form of emotional sensitivity. In an effort to identify the elements of empathy and then develop an instrument that would measure these dimensions of empathy among adults, Davis conducted several surveys using college students. First, he administered 102 college students an empirical survey regarding beliefs in empathy. Factor analysis procedures indicated that the questionnaire items loaded on

four distinct factors (which were moderately correlated with each other, as would be expected between the elements of a construct). Importance of the items loading on each factor revealed that they described aspects of cognitively taking another's perspective, experiencing uncomfortable feelings of personal distress, and experiencing warm and empathetic feelings of empathic concern, respectively.¹ Davis (1980) then carried out two additional surveys to refine the instrument, which produced the final form of the Empersonal Reactivity Index, consisting of 15 items (seven items on each of two subscales).

To determine how the four factors of the final form of the Empersonal Reactivity Index relate to each other, Davis (1980) surveyed 1,104 college students, measuring their propensity to take another's perspective, experience personal distress, and feel empathic concern relative to mental others. Aside from factor analysis procedures (which again corroborated the four subscale factors), a correlational analysis of the four factors was undertaken. Results showed that perspective taking was moderately related to empathic concern as a positive construct, but was only slightly (and negatively) related to personal distress. Finally, personal distress and empathic concern (both tapping emotional processes) were virtually unrelated, indicating that they each measure different aspects of emotional reactivity in response to others in need. Davis posited that these patterns of results indicate that the more adept people are at taking another's perspective, the less

¹ Items loading on the fourth factor describe resonance or identity with focused elements in books, films, and plays, a factor which Davis (1980) labeled *Imagery*. As that factor is not referred to in the present study it will not be discussed further.

likely they are to "take off" the other's distress as their own, and simultaneously, the more likely they are to experience feelings of compassion and concern for the person in distress. Additionally, Davis concluded, to the extent that an observer's reaction is one of personal distress, he or she will tend not to have feelings of empathic concern, whereas a situation of empathic concern generally will not involve a significant amount of personal distress. It should be noted that the Interpersonal Reactivity Index is a measure of dispositional perspective-taking, personal distress, and empathic concern, although it has been used in conjunction with situational measures of empathy to investigate the relationship between state empathy and trait empathy as predictors of prosocial behavior.

Cole, Batson, and McDermott (1994) conducted one of the first experiments to use a multidimensional conceptualization of empathy, comprised of perspective taking, personal distress, and empathic concern (what they labeled empathic emotion). They hypothesized that empathic concern, but not personal distress, predicts prosocial behavior. Two experiments were performed using college students who learned of a tape recording of a distressed person and were then given an opportunity to assist the person in the tape.

In the first experiment, Cole, Batson, and McDermott (1994) randomly assigned 44 male and female participants to one of two groups. Participants in one group were told to take the perspective of the distressed person, while those in the other group were instructed to concentrate on certain technical aspects of the tape recording. Additionally, an internal attribution technique was used such that half the participants would attribute any arousal they experienced to a drug they were given (actually a placebo), whereas the

either half would correctly anticipate my life around in their own reactions to the victim's plight. Results showed that, although level of perspective taking was not directly related to agreeing to help the woman on the tape, it was related to level of self-reported empathic concern. Further, level of empathic concern was significantly and positively related to willingness to help. Cohen, Barbee, and McElreath concluded that the latter finding supports the hypothesis that substantial negative perspective taking predicts empathic concern, which in turn is a reliable predictor of prosocial behavior.

The second study by Cohen, Barbee, and McElreath (1988) consisted of 18 female participants who also were randomly assigned to one of two groups, but this time all participants were directed to take the victim's perspective. Additionally, the second stimulation technique was changed to one that provided false physiological feedback about participants' levels of arousal such that, regardless of their true arousal, half the participants were led to believe they were very aroused while the other half were led to think they were not aroused at all. The experimenters provided three primary outcomes. First, participants in the high-arousal condition were more willing to assist the victim than were those in the low-arousal condition. Second, participants who indicated feeling more empathic concern offered more help than did those reporting low levels of empathic concern, regardless of the arousal condition. And third, participants who labeled their arousal as empathic concern agreed to help the victim more often than did participants who identified their arousal as personal distress. The authors concluded that this combination of outcomes provides substantial support for a negative relationship between

situational personal distress and personal behavior, and a positive correlation between situational empathic concern and personal behavior.

In 1991, Batson and several colleagues (Batson, Denson, Adkins, Buckley, & Fuchs, 1991) conducted a study that empirically assessed behavior hypotheses using an updated design. Building on research by Krebs (1975) showing that empathy and helping increase when a person in need of assistance is helped, by the observer, to be similar to him or herself (Batson, Denson, Adkins, Buckley, and Fuchs, 1991) randomly assigned 20 undergraduate women to be given information indicating that a woman they observed receiving electric shocks was very similar to themselves. The similarity information was intended to increase empathy among participants in this group. Another 20 participants, who received information indicating that they were very different from the woman receiving shocks, were in the low-empathy condition. Participants also were randomly assigned to two escape conditions, such that half of the participants could leave the situation entirely if they chose not to help the woman, while the other half would have to continue watching the woman receive shocks if they chose not to help. Before being given a chance to help the observed woman, all participants were assessed on their level of situational empathy. Finally, participants were given an opportunity to help the woman who was receiving shocks by making phone calls for her for part, or all, of the minimum 10-min period. Whether participants agreed to make phone calls, and if so, for how long, was the dependent variable. The researchers hypothesized that participants in the low-empathy condition would tend to experience personal distress, and thus respond in an egoistic manner by volunteering their own discomfort rather than that of the victim.

They predicted that those participants would not help if escape was easy (which would reduce their own distress) but would help if escape was difficult (which, since they could not escape, would be the only way to understand their own distress). Additionally, altruistic helpers (those in the high-escape/low-distress) were predicted to help whether or not they could escape easily, because their concern would be for the victim's distress and not their own. Results were precisely in the manner predicted, lending further support for the empathy-primed *help or harm* hypothesis.

Baltes, Dawson, Ackerman, Buckley, and Bush (1981) designed and implemented a second study that would induce empathy more directly than would similarity to the person in need. This time the empathy-manipulation involved a *misattribution technique*, whereby half of the participants were told that a (placebo) drug they had taken for a different study (which did not exist) would make them feel anxiety, sadness, and discomfort. The researchers believed that any distress these participants felt while watching the woman receive shocks would be attributed to the placebo, rather than to their reaction to the woman receiving shocks. Further, they would then attribute any empathic concern they felt to their reaction to the woman being shocked (not the placebo), and would therefore behave as an altruistic rescuer. The other participants were told that the placebo would make them feel unusually warm and sensitive, so the assumption that they would then attribute any distress they felt to watching the woman receive shocks. These participants were expected to behave in an egoistic fashion. Results indicated that participants acted as predicted. Further, as was the case in the first experiment, participants in the easy-escape, high-distress condition offered to help

significantly less than did participants in the other three conditions. Once again, the researchers concluded that the empathy-prosocial behavior hypothesis was supported, and that feeling personal distress in situations that are easily escaped from leads to a lack of prosocial behavior.

Just Dillard, Jennifer Kim, and Shelly (1988) examined the nature of the relationships between three components of empathy (perspective taking, personal distress,¹ and empathic concern) as well as how each of these elements relate to prosocial behavior. Two different measures of prosocial behavior were used, a traditional method involving willingness to make a donation, and an assessment of spontaneous responsiveness—which was operationalized as the “ability to listen and respond effectively to another in distress” (p. 100). Two experiments were performed, the first to develop a model for predicting prosocial behavior using the three elements of empathy, and the second to test the model. In the first study, 171 college-student participants completed measures of these dimensions of empathy (perspective taking, personal distress, and empathic concern) and were assessed in terms of their communicative responsiveness. Then, after watching a video about an organization that benefits children having cancer, participants were given the opportunity to assist with preparations for a camp sponsored by the organization. To ensure that participants who indicated willingness to help would actually do so, they were instructed to report to another location at another time; only those who showed up to volunteer were counted as

¹The study authors use the term *emotional empathy*.

providing traditional prosocial assistance (i.e. path analysis revealed a model where perspective taking predicted empathic concern, which predicted both personal distress and compassionate responsiveness (not form of prosocial behavior). Personal distress behavior was negatively associated with compassionate responsiveness, whereas compassionate responsiveness predicted volunteering to help (another form of prosocial behavior).

In the second study by Gill, Gillford, Sengco, Kim, and Knight (1994), 126 participants completed the same social hierarchies that were used in the first study to measure the three sub-components of empathy and compassionate responsiveness. Instead of assessing willingness to volunteer as an additional measure of prosocial behavior, however, participants completed a writing task designed to measure their skill at providing emotional comfort to someone in need. A path analysis indicated the identical pattern of relationships as was found in the first study. Gill, Gillford, Sengco, Kim, and Knight concluded that their findings support prior research showing that taking another's perspective is one social response to someone in need, and that this leads to empathic concern for the welfare of that person. Unexpectedly, however, personal distress was not a separate social response to someone in need, but rather was provided by both perspective taking and empathic concern. The study authors argue that it may be necessary to understand another person's mind from that person's standpoint (perspective taking) and also feel compassion and concern for that person before experiencing personal distress (which in turn reduces the probability that assistance will be given). Thus, deep emotional, empathic concern may produce one of two opposing outcomes.

prosocial behavior (positive action) or feelings of personal distress which are likely to result in a lack of prosocial behavior (inaction).

Eisenberg, Fabes, Miller, Fuku, Skell, Moely, and Rano (1992) used both self-report and physiological measures of empathic concern² and personal distress as an empathy-prosocial behavior study involving 63 undergraduate college students. The researchers tested one of Darson's (1983a) hypotheses that when escape from a potential helping situation is easy, persons who have high levels of empathic concern will tend to help (because they are concerned more with relieving the victim's needs rather than their own), whereas individuals who exhibit high levels of personal distress will escape (because they are more concerned with their own needs than the victim's). Physiological measurements were included because of previous empirical references that self-report data on empathy sometimes appear to be biased by social desirability characteristics, a trend is not oneself as behaving in a socially desirable manner or both (Eisenberg, Stein-Lovag, Gollwitzer, Davis, & Feshen, 1991; Eisenberg, Miller, Schiller, Fabes, Fuku, Skell, & Shea, 1994). Other evidence suggests that physiological measures reveal this problem (Eisenberg & Miller, 1987). However, since self-report data also were to be collected, several weeks prior to the experimental phase of the study, participants completed the Marlowe-Crowne Social Desirability Scale (Marlowe & Crowne, 1968) so that the social desirability factor could be measured and, if necessary, controlled for. Participants were not aware that this social instrument had anything to do with the subsequent experimental

²They use the term "empathy."

component of the study to test a dependent (rather than measured) measure of social desirability would be obtained.

During the experimental phase of Eisenberg, Fabes, Miller, Fuchs, Shell, Mastry, and Brown's (1997) study, participants viewed a videotape showing a woman and her children who had been hospitalized as a result of a car accident. The woman expressed difficulty coping with the various aspects the accident was having on her children and on her as a single parent. While watching the video, participants' heart rate was recorded using electrocardiograph equipment, and their facial expressions were videotaped from behind a one-way mirror. After viewing the videotape, participants completed self-report measures of situational empathic concern and personal distress, and were given an opportunity to volunteer time to assist the single parent and her children. The choice of whether or not to volunteer was completely anonymous and without obligations, thus classifying the choice as an easy escape situation. The physiological and self-report data were used both separately and in combination for statistical analyses purposes, and social desirability was controlled for relative to the self-report data. Results showed that both the physiological and self-report indices of empathic concern predicted prosocial behavior responses in a positive direction, and that physiological (but not self-report) measures of personal distress were either not associated with or negatively associated with intent to provide prosocial assistance.

Eisenberg, Fabes, Miller, Fuchs, Shell, Mastry, and Brown (1998) found that the mean self-reported personal distress was not found to be negatively related, as intended, to prosocial intent (desired). Results indicated a marginally significant, positive relation

between personal distress and its intent to provide assistance) was because their method of assessing self-reported personal distress (a composite index of participant-endorsed adjectives) may have reflected participants' perceptions of the distress felt by the woman on the videotape rather than their own distress. Thus, feelings of distress as measured in this study may have been a composite of other-oriented negative concerns rather than self-oriented personal distress, and therefore would be expected to relate positively to intent to provide personal behavior. This interpretation was supported by the fact that participants' self-reported negative concerns and personal distress were significantly related (negative concerns and personal distress are thought to be independent and mutually exclusive constructs). Further, the authors point out, this same explanation was used in several prior studies (e.g., Brown, Dyck, Smith, Rutter, Powell, MacIntyre, & Coffin, 1991) that found similar results. Overall, the authors conclude that their results provide additional confirmation of the idea that personal distress is negatively related—or unrelated—to prosocial tendencies, while negative concerns is positively related to prosocial intentions.

A pair of studies performed by Baggett and Moore (1994) found results that, on the surface, appeared to show that personal distress and negative concerns are related, but did the previously reviewed study by Eisenberg, Fabes, Miller, Feltz, Shell, Mathewson, Koss, 1994). Baggett and Moore (1994) assessed the variables that induce people to respond in a prosocial manner to public service advertisements about child abuse prevention and intervention. Using a rationale based on Levens's (1971) cognitive-behavioral theory of coping and the cognitive state-need model of prosocial behavior

Kristof, Darby, & Yoonis, 1993; Collins & Kazack, 1994; Rogers and Moon (1994) hypothesized that exposure to advertisements about child abuse and its prevention would trigger a chain of reactions. Initially, the viewer would perhaps experience appraisal (perspective taking) of internal and situational factors relevant to the issue of child abuse. This would lead to a combination of four distinct negative emotions (guilt, sadness, fear, and anxiety) which would lead to feelings of empathic concern. The need to alleviate the uncomfortable feelings together with the experiencing of empathic concern would provide the motivation to assist the person in need.

Rogers and Moon (1994) conducted two experiments to test their hypothesized model. The first study was designed to show that an emotional public service advertisement would facilitate the four steps of their proposed model to a greater degree than would a rational public service advertisement. One hundred forty-three undergraduate college students participated in this study, half of whom were randomly assigned to watch an emotional public service advertisement depicting the physical abuse of a child by an adult male, while the other half watched a rational advertisement that only delineated general facts and statistics about child abuse in the United States. After viewing one of the films, participants completed a survey of their negative emotions and then were shown their overall emotional reactions as well. Trained researchers rated the written emotional reaction data relative to empathic response categories, including perspective taking and empathic concern.¹ Emotional behavior was monitored by having

¹The authors used the terms *empathic concern* and *empathy*.

participants indicate their likelihood of lending assistance to child abuse prevention efforts.

Ragozin and Weiss (1994) used step-wise structural equation multiple analysis of variance procedures to test the main hypotheses, which allowed them to evaluate the sequencing and the strength of relationships between the variables in question. Results indicated that the emotional advertisement condition produced significantly higher levels of perspective taking, personal distress, negative emotions, and willingness to help than did the rational advertisement condition. Additionally, empathy did indeed appear to mediate the relationship between negative emotions and intent to help, as the researchers had hypothesized. However, for participants in the emotional advertisement condition (but not for rational advertisement condition), there was a significant direct relationship between empathy and intent to help. This finding was not expected by the researchers because it did not fit the hypothesized response pattern—but it is precisely what most other studies have found in terms of the relationship between empathy and prosocial behavior.

The second study performed by Ragozin and Weiss (1994) sought to focus more specifically on the association between negative emotions and empathy. Participants were 75 undergraduates who were randomly assigned to one of three conditions corresponding to differing levels of emotional intensity of the rational advertisement (high intensity, medium intensity, and low intensity). All variable data were collected in the same fashion as in the first study, except that empathy was assessed using a researcher-developed inventory. Results showed that levels of negative affect, empathy, and intent to help were

significantly higher at the high emotional intensity condition as compared to the average of the means of the other two conditions.

As first shown, the results of the two studies by Bauman and Moore (1994) appear to refute equality-prosocial behavior research showing that increased personal distance tends to decrease the likelihood of helping, while higher levels of empathic concern usually increase the probability of assisting. However, the results can be reconciled at much the same way that Eisenberg, Fabes, Miller, Fuku, Shell, Stebley, and Rens (1991) reversed subject misperceived their studies findings. It is plausible that the negative emotions experienced by participants in the Bauman and Moore (1994) studies represent self-oriented feelings of distress generated by the child abuse victim (as those researchers assumed) but rather emotions of anger directed toward the perpetrator of the abuse. An increased desire to help child abuse victims motivated by anger toward perpetrators of child abuse would make sense, because the anger probably precipitates empathic concern toward the victims. Furthermore, the participants in the Bauman and Moore (1994) studies were not asked to help the victims, participated in the victim (as in the case of most equality-prosocial behavior studies), so there would be no reason for them to experience personal anxiety and distress relative to helping. And finally, the unexpected direct relationship between empathy and intention to help in the first study suggests that participants' intentions to help were not necessarily predicated on feeling empathic concern, but occurred as a result of empathic concern alone.

Thus, Bauman and Moore's (1994) study findings can be interpreted in another way that they fit the pattern of results obtained by most other equality-prosocial behavior

researchers. Additionally, these two studies comprise a good example of *negative* prosocial behavior research, conducted at a more substantial sitting and focusing on more realistic issues than is the case with much of the mainstream research in this area.

Lee and Holden (1994) performed a study that represents another example of *negative* prosocial behavior research that does not focus exclusively on *positive* responses to persons in specific situational situations. These authors investigated environmentally conscious behavior, citing two reasons for including pro-environmental behavior in the domain of prosocial behavior. First, environmentally conscious efforts often entail costs in terms of time, money, or both. And second, other people (not the individual), primarily stand to gain from pro-environmental action. Lee and Holden point out that the environment itself is not the "distressed victim," but rather, other people need for a better, healthier environment. Thus, this study investigated not only situational factors that lead to prosocial behavior, but also included both *dispositional* and *situational* variables. Lee and Holden based their hypotheses on Bandura's (1977a) three-path, prosocial behavior model, predicting that *situational* personal distress and *situational* negative emotions would increase individuals' environmentally conscious behavior. Also predicted, based on prior research on determinants of environmentally conscious behavior, was that *situational* self-efficacy would increase individuals' pro-environmental behavior.

Participants in the Lee and Holden (1994) study were 78 undergraduate college students who completed a questionnaire regarding pro-environmental attitudes (including pro-environmental beliefs and feelings), situational efficacy, situational negative emotions,

and situational personal factors. Dependent variables included two categories of pro-environmental behaviour performed voluntarily by students: activities involving high costs and activities involving low costs. Multiple regression analysis revealed that although predispositional attitudes did significantly predict pro-environmental behaviour, they contributed little to the amount of variance explained. However, situational personal factors and situational response concerns were also significant predictors of both high- and low-cost individual behaviour, and together accounted for more variance than did attitudes alone. Situational self-efficacy was a significant predictor of high-cost, but not low-cost, pro-environmental behaviour (the values point that low-cost pro-environmental behaviour was not associated with measured self-efficacy because performance of low-cost pro-environmental behaviour does not require a great deal of self-efficacy). Lee and Holden (1999) concluded that their results provide compelling confirmations of Davis's (1983a)-based path model of personal behaviour. It should be noted that because the "stressor" in this particular study was not unambiguous and the "victims" were not identified or even personal to the participants, the personal distress variable probably is not functionally equivalent to personal distress as measured in other complex personal behaviour studies. In fact, it is quite possible in this instance that personal distress was actually a facet of response concerns.

An early attempt at conceptualising the association between dispositional and situational cognates as predictors of behaviour was conducted by Davis (1983a). The *Interpersonal Reactivity Index* is a means of measuring perspective taking, empathic distress, and empathic concern. Davis (1983) was administered to 101 college

students several weeks prior to the experimental phase of the study. At the beginning of the experimental phase, all participants listened to a tape recording about upcoming events in the university community (designed to be bland and uninteresting). After listening to this tape, participants completed a mood measure as a baseline measurement of state empathic concern and state personal distress. Next, participants listened to a tape recording of a female college student who was in distress. Half of the participants were told to try to understand the woman's plight from her perspective (to induce situational empathic concern), while the other half were told only to pay close attention to the details of the tape recording. After listening to the tape, participants' current state of empathic concern and personal distress were again measured using the mood measures, and then they were asked if they would be willing to assist the woman on the tape.

Results of the Davis (1983a) study showed that emotional concern was significantly associated with helping, whereas personal distress was not (a well-established finding in the prosocial behavior literature). Additionally, trait emotional concern was significantly related to state empathic concern, whereas trait perspective taking was unrelated to state emotional concern. These findings appeared to show that state empathic concern could predict prosocial behavior whereas trait empathic concern predicted state empathic concern, which predicted helping.

However, when Davis (1983a) ran a set of hierarchical regression analyses using the two measures of perspective taking and emotional concern as predictors of offers to help, some unexpected results were revealed. First, trait-empathic concern did not have a direct bearing on helping behavior (although, neither did trait perspective taking directly

prosocial helping behaviour) instead, higher levels of *task perspective taking* significantly predicted helping behaviour only for those participants who were induced to experience *relational-empathic concern* (by taking the perspective of the terrified child). This finding may suggest that, for those persons who have a predisposition toward taking another's perspective being "rewarded" to take that other's perspective in a specific situation results in evoking stronger feelings of *empathic concern*, which subsequently increase prosocial behavior. A third unexpected result was that participants who scored higher on *task empathic concern* and were *not* induced to feel *relational-empathic concern* tended to offer help more often than those who were induced to experience *empathic concern*. Although this result initially appears to be at odds with a link between *dispositional* and *relational-empathic concern* relative to producing prosocial behavior, closer inspection may reveal otherwise. It is possible that persons who share high levels of *task concern* may negatively respond to being induced to feel *emotional concern* in specific situations whereas if they are not told to do something, they already do naturally. One predisposition to feel *empathic concern* for others motivates them to provide assistance. In summary, some of the results of this study appear to support the idea that school personality tests may be adequate predictors of relational prosocial behavior, while other results only add to the confusion surrounding this issue, thus contributing to complexity.

Another study by Davis (1984) contradicts strong support for a link between *dispositional empathic concern* and prosocial behavior in a specific situation. Davis observed that the primary method of relieving victims in charity events is the annual *Jonny Lewis Marston Dyslexia* which used an *Edgar Day* weekend appeared to be in

induce empathic concern for victims of muscular dystrophy. To test her hypothesis and explore the effectiveness of the volunteer technique, Davis recruited 116 college students soon after the annual closing of the telethon, and asked them to complete the Interpersonal Reactivity Index (Davis, 1983) as a measure of their trait perspective taking, trait personal distress, and trait empathic concern. Davis (1983) hoped to show that scores on the empathic concern subscale (but not the perspective taking or personal distress subscales) of the Interpersonal Reactivity Index would predict level of monetary donations to the telethon. Results of simultaneous relation multiple regression analysis (which show the effect of each predictor variable after controlling for all other predictor variables) indicated that trait empathic concern scores were a significant (positive) predictor of level of monetary donations. Trait perspective taking and trait personal distress scores were not related to level of monetary donations. Davis noted that although the results pointing to empathic concern as a predictor of prosocial behavior were indeed significant, the amount of covariance between the two variables was low ($p < .25$). He attributed this to the fact that a dispositional, rather than situational, measure of empathic concern was used to predict prosocial behavior (a specific situation). Nevertheless, this study shows that trait levels of empathic concern can be a somewhat reliable predictor of prosocial behavior.

Thornberg, Miller, Schaller, Fisher, Fiske, Kiehl, and Olson (1989) investigated both dispositional and situational antecedents to prosocial behavior, and also examined the role of social evaluation in the effects of empathic concern on prosocial behavior. Prior to the beginning of the experimental phase of the study, 78 college students completed several personality measurements, including two social desirability scales and an emotional

anonymously made (participants were assured that their data collection was connected to the experimental phase). For the experimental phase, participants were randomly assigned to either an experimental group or a control group. Those in the experimental group were led to believe that electrocardiogram equipment (to which they were connected via electrode leads) in an adjoining room could accurately report their attitudes and emotional responses. Participants in the control group were told that the electrocardiogram equipment was merely to record their physiological responses during the experiment. Next, all participants completed the Intrasexual Attraction Index (Davis, 1988) as a measure of their trait perspective taking, personal distress, and negative concern. Participants then watched a videotaped interview interviewees with a mother who, along with her children, had been hospitalized after an automobile accident. The interview, a single person, was very concerned about being able to cope with daily living activities (shopping, shopping, cooking, etc.) and the financial and emotional aftermath of the accident after being discharged from the hospital. When the videotape was finished, participants completed a seven-point measure measuring their dispositional personal distress, empathic concern, and concern, and then were given an opportunity to watch the videotape with daily living activities of their own choosing.

Results of the Eisenberg, Miller, Schultz, Fabes, Petit, Shell, and Stone (1990) study showed that the effects of situational empathic concern on helping was somewhat moderated by social evaluation concerns: subjects with evaluation was largely unaffected by the effects of the dispositional variables on prosocial behavior. Additionally, dispositional perspective taking and dispositional empathic concern were

significantly related to helping intentions, both directly and mediated by situational ascribed concerns. This finding involving dispositional factors as predictors of prosocial behavior (behavior is not mediated by situational variables) supported the study hypotheses and reinforced evidence that dispositional perspective taking and ascribed concerns may play central roles in predicting prosocial behavior.

In another exploration of dispositional and situational antecedents to prosocial behavior, Clark, Wordenberg, Toppin, Switzer, and Spoor (1991) focused on the particular helping situation conditions that might influence the probability of help being given. These researchers predicted that persons who have experienced protogeometric (extreme proximity) would be more likely than others to give assistance in a needy person when it would be very easy not to help (i.e., easy-exit situation) and when the needs of the person are salient. Additionally, they predicted that trait, as opposed to state, antecedents of prosocial behavior would be most likely to result in prosocial behavior in less structured or emotionally evocative conditions (when, for instance, social demand characteristics are not present), whereas situational factors would be associated with more helping than dispositional factors in situations that are highly structured or emotionally evocative.

Shortly before the experimental phase of the Clark, Wordenberg, Toppin, Switzer, and Spoor (1991) study, 109 college students were administered inventory measures of trait social desirability, trait anonymity, ascription of responsibility, social responsibility, and the trait perspective taking, trait personal distress, and trait empathic concern subscales of the Interpersonal Reactivity Index (Davis, 1983). Participants

thought that this initial data gathering session was unrelated to the subsequent portion of the study. For the experimental phase, participants were randomly assigned to one of five conditions: low-exposure, easy-escape; low-exposure, difficult-escape; high-exposure, easy-escape; high-exposure, difficult-escape. Participants in all conditions watched a videotape of a male researcher interviewing a young woman who ostensibly was rating the journalistic quality of several sexual assault descriptions. The young woman soon began to display obvious but mild cues that she was feeling uncomfortable. She then divulged that she was recently sexually assaulted, so the task was somewhat difficult for her. At this point, the two exposure conditions were implemented, such that those in the high-exposure condition saw the young woman becoming increasingly upset and agitated, whereas in the low-exposure condition her affect remained fairly benign. After a short time, participants were given the opportunity to help the young woman by completing the sexual-description rating task for her, and the escape conditions were implemented. The easy-escape condition allowed participants to leave immediately if they wished not to help, whereas in the difficult-escape condition they would have to watch the young woman complete the task if they chose not to help her. At different times during the viewing, participants were administered mood checklists to tap their situational personal distress and situational-empathy concerns.

Results of deCrede, Eisenberg, Taylor-Swanson, and Spoor (1994) study partially supported both hypotheses, showing that, after controlling for social desirability, high levels of dispositional personal tendencies (composite indexes of trait ascription of responsibility, social responsibility, perspective taking, and empathic concern) were

significantly related to level of helping for participants in the high-emotive, easy-sympathy condition (although levels of helping were not highest for participants in this condition, as was expected). In addition, situational personal distress was correlated to level of helping behavior in all three conditions, while the strongest relationship between situational empathic concern and helping was in the high-emotive, easy-sympathy condition (and was almost as strong as the other three conditions combined). This finding is very supportive of the notion that situational empathic concern is a good predictor of prosocial behavior. Nevertheless, the findings involving the hypothesized variables confirm that these factors also play a role in influencing prosocial behavior in certain contexts.

Carlin, Allen, and Buchanan (1994) contended that one of the possible reasons for inconsistent and weak associations between personality dispositions and prosocial behavior is that additive, rather than multiplicative, models have been used. To test this assumption, they formulated an interactive model involving trait perspective-taking, trait empathic concern,¹ and trait personal distress as predictors of prosocial behavior and then conducted an empirical investigation. They hypothesized that in order for prosocial behavior to be reliably predicted, either trait perspective taking would have to be high and trait personal distress low, or trait empathic concern would have to be high and trait personal distress low. Study participants consisted of 112 undergraduate college students who completed a multidimensional measure of trait empathy (the Interpersonal Empathy Scale; Davis, 1983), and a social desirability scale (Crowne & Marlowe, 1960). (In

¹The study authors used the term *sympathy*.

weeks later, participants were given a chance to volunteer for several local community service agencies. Participants were assured that the volunteer opportunity was contained in the confederate component of the study. Although participants who agreed to volunteer were later given the option to follow through on their intent, only the number of hours they planned to volunteer were used in the study analysis.

Initial analyses of the Cialdini, Allen, and Bauman (1998) study data indicated that trait perspective taking was moderately related to empathic concern as a positive disposition, but unrelated to personal distress and relatively independent of volunteering. Empathic concern was only slightly related to personal distress, but moderately and positively correlated with volunteering. Because social desirability was found to be related to all three independent variables, and subsequent analyses of variance showed that females had consistently higher scores on all variables than did males, social desirability and gender were both used as covariates in all remaining analyses. A hierarchical multiple regression analysis revealed that there was no main-effect relationship between trait personal distress and volunteering, but there were moderate linear relationships between trait perspective taking and volunteering, and between trait empathic concern and volunteering, respectively. However, when level of dispositional personal distress was low, level of dispositional perspective taking predicted intent to volunteer was positive manner. Further, when dispositional personal distress was moderate or higher, dispositional perspective taking was not associated with volunteering. Unsurprisingly, trait empathic concern was not predictive of volunteering at any level of trait personal distress.

Carlo, Allen, and Bohannan (1998) concluded that a multiplicative relationship does appear to exist between *real* personal distress and *real* perspective taking in predicting prosocial behavior, but that *real* empathic concern may only have a loose connection to prosocial behavior. This research supports the notion that the construct of empathy is indeed multidimensional, being comprised of perspective taking, personal distress, and empathic concern. It also indicates that *real* perspective taking, personal distress, and empathic concern probably are related to prosocial behavior in both independent and interactive fashions.

Despite the various methodological problems associated with empathy, prosocial behavior studies involving children (as discussed in Chapter 1) have rarely studied children in the literature review because of their relevance to the proposed study, as they both involve the elements of empathy central to the present proposal, and both have to do with dispositional antecedents of prosocial behavior. The first, by Lizabeth Miller McInerail and Ramey (1997), involved 438 children from 1st, 4th, and 7th grades who completed an adapted version of the Intrasexual Ramey Index to measure of *real* perspective taking, *real* personal distress, and *real* empathic concern. Davis (1980) and a social desirability scale of the questionnaire, *Teacher's Student's* dispositional prosocial behavior tendencies were assessed using questionnaires developed for the study that listed real self-report reactions to several vignettes describing a variety of persons (and a puppy) who were in need of assistance. Teachers also rated students in terms of their levels of prosocial behavior in the classroom. At this point, participants were randomly assigned to a treatment group or a control group. Prior to

watching a film about a family needing financial assistance and a program designed to help such families. The experimental group was told to take the perspective of the person in need portrayed in the film (to reduce emotional negative concern), whereas the control group was not given any instructions. After viewing the film, all participants were given an opportunity to donate money to the assistance program or donate time to help raise money for the program.

Results of the Liversich-Miller, McInerney, and Kennedy (1997) study showed that levels of dispositional negative concern increased with age, and that both dispositional empathic concern and (to a lesser extent) dispositional perspective taking significantly predicted prosocial behavior, while dispositional personal distress did not. These results parallel the majority of empathy-prosocial behavior studies using adult participants, and provide compelling evidence that by the 6th grade the ability to take another's perspective and experience empathic concern is largely developed. Additionally, this study demonstrates that dispositional perspective taking and dispositional empathic concern can reliably predict dispositional prosocial behavior—a finding that is especially important to the present study.

Another empathy-prosocial behavior study involving somewhat younger children (ages 4 through 9) used a multiplicative model of dispositional affective reasoning, negative concern,² and society knowledge to predict prosocial behavior in the form of monetary donations (Knight, Johnson, Cohn, & Eisenberg, 1994). Participants were 64

²These researchers use the functionally equivalent term sympathy.

children, all of whom were assessed on the three independent variables (the affective reasoning task in basically a form of perspective-taking). Participants then watched a video about a girl who becomes bullied as an outcast, is hospitalized, and as their teacher shows at different stages of recovery (first having to cope with teasing, pain, and so on). After watching the video, children were given an opportunity to anonymously donate money (using money given to them for participating in the study) for a local hospital fund. Finally, participants were debriefed, and any money they chose to donate was given back to them.

Knight, Johnson, Crafts, and Eisenberg (1998) used a hierarchical multiple regression analysis to measure the predictive ability of the three dispositional variables and all possible interactions across the level of monetary donation. Several results were obtained that are of interest to the present study proposal. At the first step of the regression analysis, money knowledge and cognitive concerns, but not affective reasoning, were significant main effect predictors of donation level. At the second step of the analysis, only the money knowledge main effect and the affective reasoning-by money knowledge interaction term significantly predicted donation level. Importantly, however, the addition of the two-way interaction terms to the model almost doubled the amount of donation variance explained. At the third step of the equation, significant terms consisted of the main effects for empathic concerns and money knowledge, the two-way interaction effect involving affective reasoning and money knowledge, and the three-way interaction involving affective reasoning, money knowledge, and sympathy. Because of the three-way interaction term, at the third step accounted for a little more than one-and-a-half

times the variance explained by the main-effects alone. Clear inspection of the three-way interaction indicated that monetary decisions were significantly higher for participants who scored high on money knowledge, effective reasoning and empathic concern, whereas participants who scored low on any of the three independent variables decided significantly less.

Knight, Johnson, Curtis, and Bransberg (1994) reported additional results showing that as participants' ages increased, they scored significantly higher on money knowledge and decided significantly more. A subsequent multiple regression analysis confirmed responses that decisions increased as participants got older because they were gaining more knowledge about money (meaning that increases in empathic concern and effective reasoning were not related to maturation, but to individual differences in ability). The researchers concluded that the use of the multiplicative three-way interaction term to predict prosocial behavior produced a much more powerful prediction model than was obtained by using an additive (main effects) model alone. They recommended that exploration of the relationship to prosocial behavior include multiplicative rather than additive models, especially when the focus is on dispositional factors.

Summarizing the research on the relationship between the components of empathy and prosocial behavior, it is clear that there is compelling empirical evidence indicating that empathy represented as a reaction to someone else's distress is actually a multidimensional construct comprised of cognitive perspective taking, emotional personal distress (self-oriented), and emotional empathic concern (other-oriented). Furthermore, perspective taking is most often positively associated with empathic

concerns and tends to be negatively correlated with personal distress. Finally, empathic concern, but not personal distress, influences the probability that assistance will be given to persons in need. However, the mechanisms of the measures of perspective taking, personal distress, and empathic concern to prosocial behavior are much less clear, although that empathic concern appears to play an important role in motivating prosocial behavior.

Research on the Impact of Pets on Humans

We now turn to the research investigating the positive effects that pets have on people. It is important to note that, given the tremendous number of pets present in households around the world, relatively little research has focused on this issue. Additionally, studies in this area have often focused on the effects of merely owning a pet, rather than on the nature of the human/pet relationship. Indeed, a published summary of research presented at the NIH Technology Assessment Workshop on the Health Benefits of Pets (National Institutes of Health, 1988) reported that while there appeared to be small but significant positive physical health and mental health effects resulting from simply owning a pet, findings might well have been more substantial and definitive had researchers measured the quality of the relationship between pets and their owners (usually operationalized as how psychologically attached or emotionally invested pet caretakers are to their pets). Therefore, both of the following sections reviewing the research begin with studies that only looked at pet ownership and conclude with those studies measuring the quality of the human/pet relationship.

Research on the Physical and Psychological Benefits of Pet Ownership and Pet Attachment

Previous to 1980, studies on the impact of pet ownership were primarily correlational observations or pseudo-experimental correlations, which did not produce dependable or verifiable findings. The first empirical study to reliably identify benefits of animal companionship was conducted by Friedman, Katcher, Lynch, and Thomas (1983) in a study measuring the impact of social support and social isolation on the survival rate of coronary patients. The researchers hypothesized that, after taking into account patients' preexisting medical conditions, social isolation would decrease, and social support would increase, the likelihood of survival. Pet ownership was included as a variable because although it was widely assumed that pets provide social support, no previous study had tested this assumption. To test their hypothesis, 96 Coronary patients were interviewed before being released from a coronary care intensive unit. During the interview, researchers administered a psychological mood checklist and a social data inventory. Additional data were collected from the patients' medical records, including physiological predictors of survival after myocardial infarction (to investigate whether the effects of the social factors were associated with the patients' preexisting medical conditions). One year after the initial interview, 28 percent of the participants who had no pet had died, whereas only 8 percent of the participants who had a pet had died—a significant difference. Type of pet (dog versus others) was attributed to survival. Although the single best predictor of participant survival was participants' physiological status, the next best predictor of survival was pet ownership. No other single factor in

combination of factors added a consequential amount of explained variance. Friedman, Katcher, Lynch, and Thomas concluded that the results of this study supported their social support hypothesis and the premise that pets may provide an important source of "social support" at a life-stage when it is often lacking.

Eleven years after publishing the results of the aforementioned study, Friedman and Thomas (1991) published the findings of another, similar, 5-year longitudinal study. This time the sample was randomly selected, consisting of 148 elderly persons who were participating in the Cardiac Arrhythmia Suppression Trial testing the effects of three drugs. At the beginning of the study, participants were administered inventories measuring social support, social responsiveness, non-trust anxiety, depression, level of daily living anxiety, and anger expression. Data were also collected on the participant's demographics, health status (based on medical information), any abnormal life events they had experienced within the prior year, and whether or not they owned a pet. As a group, pet owners did not have any significant survival advantage over non-pet owners, but when dog and cat owners were analyzed separately, dog owners had a significantly better chance of survival than non-pet owners, whereas cat owners did not. Dog ownership (but not cat ownership) also was associated with survival after controlling for physical health, demographics, and psychological status. Because previous research has suggested that a possible reason that dog owners appear to have a greater survival rate than non-pet owners is that they are healthier prior to owning a pet, and therefore chose to own dogs instead of other types of pets, Friedman and Thomas tested this hypothesis by comparing the physical health status of dog owners to the physical health status of non-pet owners

No significant differences were revealed between the two groups, indicating that dog owners are not, on average, any more healthy than owners of other types of pets or people not owning pets. This research study provides increasing additional support for the notion that dog ownership increases survival among coronary patients.

Regele (1992) studied the relationship between pet ownership and physician visits among the elderly, nonworking, LCHF Medicare patients several times over the course of a year. Data collected during the interview included demographic characteristics, pet ownership and quality of relationship with pet, chronic health problems, social network involvement, level of depression, stressful life events experienced, and number of doctor visits. Regression analyses revealed that, after controlling for demographic variables, social network score, and health status, respondents owning pets visited a physician significantly fewer times overall than did those not owning pets. Additional analyses indicated that the participants who did not own a pet, a high number of stressful life events (as opposed to a low number) was associated with increased physician contacts, whereas for participants who did own a pet, the number of doctor visits was not related to incidence of stressful life events. Thus, owning a pet appeared to reduce the negative impact of stressful life events (as evidenced by fewer physician visits). Further analyses showed that dog ownership appeared to no longer be related to the impact of stressful life events on number of physician visits significantly more so than owning another type of pet or no pet at all. Investigations into the factors that differentiated dog owners from other-pet owners revealed that dog owners spent more time outdoors with their dog, talked more often to their dog, felt more emotionally attached to their dog, and reported a higher rate

of advantages of having a pet relative to disadvantages of owning a pet. These results suggest that, among the elderly, owning a dog (as opposed to other types of pet) appears to provide a buffer against extended life events, which in turn may result in fewer physician contacts. Additionally, although quality of relationship with pets was not measured, based on the finding that shelter-sourced dog owners (vs. other pet owners - dog owners) appeared to have closer relationships with their pets than did owners of other kinds of pets.

Ory and Goldberg (1982) conducted one of the first studies assessing the quality of the human-pet relationship (pet attachment) in a study investigating the factors associated with the physical and mental health of elderly people. The sample consisted of 1,075 generally healthy, married/Canadian women between the ages of 65 and 75, and living in a noninstitutionalized environment. Data were gathered on participants' demographics, socioeconomic status, health status, level of physical activity, and level and quality of social interaction. One aspect of the social interaction data were several questions about pets, including pet ownership, type of pet, and level of pet attachment. Results showed that while pet ownership was not related to happiness, level of pet attachment was significantly related to perceived happiness in a positive manner. However, among women of higher socioeconomic status, those owning pets reported greater happiness than did non-owners, whereas among women of lower socioeconomic status, pet owners reported less happiness than did non-owners. Ory and Goldberg concluded that the mixed nature of these results suggests a complex relationship between pet attachment and perceived happiness, and recommended further research on the topic.

Gearty, Sullivan, Wilson, and Johnson (1998) interviewed 1,202 persons aged 60 years or older by telephone using a random-ordered probability sample in order to investigate the relationships between emotional health, physical health, and pet attachment. They were specifically interested in the effects of attachment to a pet have on depression, emotional stress, and social support. Data were collected on respondents' demographics, health status, recent life events, emotional distress, and human and animal attachments. In several different analyses, higher levels of pet attachment significantly predicted lower levels of depression, but the amount of variance explained by pet attachment was, for the most part, very small. However, in terms of social support, stronger attachment to a pet was related to better health status when human social support was unavailable. To further explore the effects of pet attachment and social support on depression and health status, Gearty, Sullivan, Wilson, and Johnson analyzed a subset of data consisting of respondents who had reported that a significant person in their lives (spouse, family member, or close friend) had died within the previous year. Results showed that bereaved participants having two or fewer confidants experienced less depression when they had a strong, as compared to weak, attachment to a pet. This study provides evidence that, among the elderly, having a quality relationship with a pet can substitute for a lack of human social support, and that this substitute support does not pet can decrease depression and improve physical health.

Wilson (1997) surveyed 87 recently widowed women in order to explore the effects of pet ownership and pet attachment on psychological adjustment in the death of their spouse. Dog owners who were consistently attached or well-attached (by self-report) to

their dogs were compared to non-pet owners. Respondents were administered a grief questionnaire and a social support inventory, and were asked several questions concerning demographics and circumstances surrounding the husband's death. As compared to non-pet owners, dog owners tended to report experiencing fewer symptoms of despair, and showed a tendency to remain in good health after the spouse's death if their health was good before the death. However, widows who owned dogs and indicated that their health was not good before their husband's death generally continued to have poor health after his death. The authors interpreted this latter finding as indicating that widows who were not healthy prior to their husband's death were afraid of losing yet another close and stable relationship after the death of their husband, so their health did not improve. Nevertheless, however, women who have a somewhat attached or very attached relationship to a dog appear to feel less despair than do non-pet owners, and dog owners who are healthy before her spouse's death tend to remain healthy after his death.

Raine, Wolke-Town, Bonnett, Woodward, and Kennedy (1994) used a longitudinal design to investigate the influence of pet ownership and pet attachment on the physical and psychological health of the elderly. These researchers selected a random sample, stratified by age and gender, of adults 65 years or older who were living in the community. Data were collected by telephone interviews with 193 participants at the beginning of the study and again one year later. Descriptive statistics showed that pet owners tended to be younger, married or living with someone, and more physically active than non-pet owners. After taking into account baseline scores, pet owners reported significantly higher levels of daily living activities than did non-pet owners, indicating

that pet owners were more physically active in terms of daily living behaviors. However, no significant relationship was found between the quality of relationship with a pet and daily living activities. Additional analyses revealed that, after controlling for baseline psychological health, physical health, and demographic variables, an interaction was found between pet ownership and social support as stress mediators in their effect on psychological health. Examination of this interaction indicated that, among participants who had little social support or those of color, the psychological health of those who did not have pets deteriorated more than did those who did have pets. In other words, among the elderly, if little or no social support is available from other people during a crisis, a pet may provide a buffer from the psychological stress of the crisis, in a manner somewhat akin to human social support. These findings are similar to those of much of the research on the effects of pets on physical and emotional health among the elderly.

Another study examining the effects of pet attachment on the psychological well-being of the elderly was performed by Miller, Rhoads, and Priebe (1992). The sample included 256 adults between the ages of 50 and 73. Participants completed the Hamilton and Ulfhake Social-Demographic, Coping, Distress, Fulfillment, & Loneliness, 1980; Karasek Coping Strategies, & Loneliness, 1981), a questionnaire that asks respondents to rate the degree to which various life events have been a burden and/or an uplift in their past twelve days. After the questionnaire was completed, participants were interviewed to gather demographic, social interaction, and physical health data. For analysis purposes, participant data were divided into two groups: those who reported experiencing at least a moderate level of

hounds or uphills due to their pet, and those who reported neither hounds nor uphills as a result of their pet.

Miller, Nassis, and Poulos (1992) reported that group means comparisons showed that the moderate handicapped group (as compared to the no handicapped group), were more educated, had a more optimistic outlook on the future, and believed they were more healthy, more socially and physically active, and more satisfied with life. Further analysis of the group reporting moderate level of hounds or uphills due to their pet showed that professed uphills significantly outweighed extreme hounds. Additionally, those who reported more intense uphills than their pet also indicated that they talked to, and interacted with, their human hounds more than did those reporting less intense uphills.

Finally, Miller, Nassis, and Poulos (1992) reported that a discriminant function analysis revealed that among women who reported less moderate levels of hounds or uphills due to pet ownership, those who were fairly young, working part time, or had children living at home tended to report their pet was more of a hound than an uphill. The authors speculated that response to defining their middle-aged women who lack time and money resources find that pet is generally a hound. Another finding showed that among women, higher socioeconomic status, less availability of free time and money for recreation, better health, quality social interactions, and few family hounds were all related to receiving more uphills from their pet. In contrast, among men, receiving more uphills from pet was associated with reduced availability of free time and money for recreation, needing less hounds, and few family hounds. The authors conclude that women who have close relationships with their pet (i.e., receive more uphills from their pet)

also tend to have a higher quality of life overall. However, such side-effects to their pets may be compensating for a lack of quality in other aspects of their lives (especially socialising outside the family).

A study investigating the efficacy of using an array to relieve depression among elderly males was conducted by Hollnbeck, Jordan, Weber, and Nichols (1997). Participants were 31 males attending a Veterans Administration Medical Center adult day care program. As the array was mobile, a repeated-measures design was used to improve the power of the design. The first hypothesis, that simply having auditory present at the day care center would reduce depression, was not confirmed. However, further analyses revealed that participants who spent the most time focusing on the array had the greatest reduction in depression scores, which confirmed the second hypothesis. The authors concluded that either spending more time focusing on the array reduced depression, or, participants started to spend more time focusing on the array as a result of reduced depression (from unknown causes). Either way, this study shows that even birds that are not actual pets can have a positive effect on levels of depression among elderly men.

One of the few pet-attachment studies looking at young- and middle-aged adults was performed by Stallone, Johnson, Gortzel, and Kahn (1998) as part of the construction of a pet attachment instrument. A randomised national telephone survey was conducted of 1141 pet owners ranging from 18 to 64 years old. Respondents were asked questions pertaining to the nature of their relationship with their pet, and demographic data were gathered. Internal status was the only demographic variable significantly related to level of pet attachment; respondents who had never been married, or were divorced or

volunteers were more attached than those who were married. As other studies have shown, it is possible that pets provide a source of social support when support is less available or not available from other humans. Another analysis revealed that singletons who were the only person sitting next to the bowl-held pet scored highest on the attachment scale, while those who never used the pet had the lowest scores. As the authors point out, these results support the common sense notion that the higher the caregiving involvement made for an animal, the higher the level of attachment to that animal, and vice versa.

Another study using middle-aged adults as participants is also one of the few studies in this area to use various group comparisons. Allen, Blascovich, Tomaka, and Kirby (1994) hypothesized that, among persons who have a close relationship with their pet, having the pet present during a stressful task would reduce physiological indices of stress more so than having a close friend, or no-one at all, present during the task. Participants were 45 Caucasian women ranging from 27 to 31 years old, each of whom had a self-reported close relationship with her dog. The first phase of the experiment took place under laboratory conditions. Physiological measures were taken during a resting baseline period, first during a psychologically stressful task (doing a series of mental arithmetical problems), then during another resting period, and finally during a second period of the same stressful task. Two weeks later the same protocol was followed in each participant's home, except that now the challenge task was performed under one of three randomly assigned experimental conditions: with the participant's dog present, with a close human friend present, or with neither dog nor friend present (control condition).

Results of Allen, Mancoske, Tomaka, and Kelsey's (1993) study confirmed the researchers' predictions. First, there were no significant differences in the physiological indicators between the three experimental conditions in the laboratory setting, but significant differences were found for the home setting data. Second, an expected significant interaction-effect was found between experimental condition and the baseline-to-task performance variable for the home-setting data. Finally, planned contrasts indicated that participants in the friend present condition had significantly greater autonomic reactivity (between baseline and task performance) than did those in the control condition, and the autonomic reactivity of participants in the control group was significantly greater than those in the pet present condition. The authors presume that the increased autonomic reactivity of the friend-present condition occurred because the presence of the friend increased the participants' evaluation anxiety. Alternatively, not only does having a pet dog present not produce any evaluative apprehension, but may actually help reduce performance anxiety (due to positive feelings pets often evoke in their owners) and thus reduces autonomic reactivity even more than having no-one there at all. This research indicates that in certain contexts, a closer relationship with a pet dog is more advantageous than either a closer friendship with another human, or no relationship at all.

A retrospective study examining the effects pets have on bereaved adults was performed by Adkins and Bajbouj (1994). Participants were 64 parents who had suffered the loss of a child at least one year prior to the beginning of the study, and who had owned a cat or dog when the child died. Participants were interviewed regarding the con-

pet that had the most impact (positive or negative) during the bereavement process, quality of participants' relationships with their pet, and participants' emotional responses to, and methods of coping with, the child's death. Results showed that pets were significantly more helpful than other things or people during the bereavement process, especially the longer the bond between participant and her or his pet. Additionally, participants who were well-attached to their pet indicated that the pet was a source of comfort and distraction and served the role of a confidant. However, those participants who were usually isolated or often angry during the bereavement period viewed their pet as a scapegoat. Unexpectedly, a significant and positive association was found between level of emotional reaction to the child's death and level of worry about the pet's welfare. The authors suggest that the child's death may have increased concern for members of the family (including the pet) who survived. This study provides strong evidence that in some circumstances, having a quality relationship with a pet can be beneficial to parents who are grieving the loss of a child.

Research Suggesting Pet Ownership and/or Pet Attachment Increase Empathy

Of the very few studies on the link between pet ownership or pet attachment and increased empathy, almost all have used children as participants. One notable exception is this one study by Hyde, Kuehn, and Larson (1993), who examined the effects of pet ownership on self-concept, interpersonal trust, and empathy among college students. Participants were 60 current pet owners and 60 non-owners who completed scales of each of the three aforementioned variables. Results showed that current pet ownership was not related to level of self-concept, but was negatively related to empathy in a positive

direction, and significantly related to interpersonal trust in a positive direction. The authors concluded that this research supports the notion that pets can have positive effects on their owners. They also suggested that their findings might have been stronger had they gathered more precise data on those students who did not currently own pets (i.e., whether or not they had ever owned a pet). Effects also might have been more robust had quality of relationship with pet been assessed rather than just pet ownership.

Anderson (1992) evaluated a year-long humane education program in a public school setting using a pretest-posttest design. Participants in the pretest phase were 413 elementary school students who completed a questionnaire about prior experience with companion animals (including whether currently there was a pet in the household), a measure of their attitudes toward the humane treatment of animals, and a trait empathy scale. During the posttest phase, 365 of the original participants completed the same measures as during the pretest phase. Roughly half of the participants received the humane education curriculum intervention, which consisted of at least 40 hours of classroom instruction devoted to the curriculum of understanding, respecting, and caring for pets and other animals. Students not receiving the intervention served as a control group. Results from the pretest phase showed significant correlations between level of humane attitudes toward animals and level of human-directed empathy among fourth- and fifth-graders, but not first- and second-graders. Further, results from the posttest phase revealed that as a group, those fourth- and fifth-graders (but not first- and second-graders) who received the humane education intervention had significantly higher levels of empathy than did those students who received no humane education instruction. Pet ownership

was not related to baseline attitudes or empathy either before or after formal humane education instruction was given. Asinine concluded that the significant positive findings indicate that even without formal humane education instruction, older elementary students who have more humane attitudes toward animals also have more empathy toward other people. Further, positive Asinine, the significant positive results suggest that the addition of formal humane education instruction has a positive impact on other directed empathy over and above pre-existing humane attitudes. Although this study was not designed to study the specific effects pets have on children, it nevertheless provides important evidence suggesting that even increased humane attitudes about animals (including pets) can positively affect children's empathy dependent toward other people.

Asinine and Weber (1994) conducted a follow-up study of the fourth graders from the above-mentioned study (now in fifth grade) to determine whether the effects were maintained one year after the ending of the earlier study. Although the sample size was somewhat less ($N = 154$), attrition rates were equally significant for both the experimental group and the control group. Based on recommendations made at the end of the prior study, Asinine and Weber included an inventory assessment of the level and quality of participants' interaction with their pet (rather than just pet ownership). Findings indicated that participants who were in the experimental group from the original study maintained significantly better humane attitudes at follow-up than did those in the original control group, although the initial difference value was slightly less. Further, including quality of relationship with a pet as a covariate resulted in an increased

magnitude of difference in attitude scores between the experimental group and control group at the end of the year study, and the difference level was maintained at follow up. This indicates that the humane education intervention apparently enhanced the maintenance effect for those children who had higher quality relationships with their pet. Finally, when the authors used quality of children's relationship with their pet as a covariate, the experimental group maintained higher levels of human-derived empathy at follow up than did the original control group. Thus, they concluded an additional benefit of formal humane education provision to children who have close relationships with their pet, is an increase in empathy toward other people.

Parvody (1998) studied both pet ownership and pet relationship quality in terms of their effects on the psychosocial development of 44 children ranging from 3 to 6 years old. Half of the children owned at least one pet, whereas the other half did not own a pet. Parents completed measures of their children's psychosocial development and, if they owned a pet, level of the child's attachment to that pet. Pet owners were also visited at home to assess children's empathy (in terms of cognitive and affective perspective taking), intellectual functioning, and quality of home environment. Results revealed that children whose household included a pet had significantly more positive attitudes about pets than did children whose household had no pet. Significant correlations were found between the quality of the child-pet relationship and child's level of social development, whereas pet ownership was not significantly correlated with social development. Additionally, pet ownership was not associated with level of empathy, whereas quality of child-pet relationship was positively correlated with level of empathy. The authors

concluded that these findings support other results showing that research on the impact of pet on human mental health more potential affects when quality of pet owner relationship is sustained rather than just pet ownership. Furthermore, this study suggests that children can gain positive psychological effects—including increased empathy—from having a close relationship with a pet.

The strongest support for a link between relationship quality with a pet and other directed empathy was established in a relatively recent study by Yule et al., 2010, and Borkin (2009). Participants were 428 fourth-, sixth-, and eighth-graders (44% were pet owners), who were assessed on their loneliness, social anxiety, empathy, prosocial intentions, and level of attachment to pet. A series of analyses of variance procedures revealed three notable results. First, among children who owned pets—dog owners and cat owners were more attached to their pets than owners of other types of pets. Second, dog owners (but not cat owners) had significantly higher levels of empathy and prosocial intentions than did non-owners. Third, participants who had the highest levels of attachment to their pets had significantly higher levels of empathy and prosocial intentions than did both those whose pet attachment levels were low and those who did not own pets. This third finding provides strong support for further exploration of the connection between quality of a relationship with a pet and other-directed empathy, which is the central aim of the present study.

Three points can be made by way of summarizing the research on the positive effects of pet ownership and quality of relationships with pets on the physical health and psychological well-being of humans. First, although relatively strong evidence exists

suggesting that strong emotional bonds with pets can result in both physical health and psychosocial well-being benefits, continued research is needed to further investigate this issue. Second, it is clear that studies on the possible benefits pets have on people should measure the quality of the human-pet relationship rather than merely identifying pet ownership. The present study followed this recommendation. Finally, of the comparatively few studies in this research field, only a handful have explored the possibility that a quality relationship with a pet could increase other-directed empathy (and only one has taken the next step of also investigating the influence of pet attachment on prosocial disposition). Thus, there was need for additional support for the link between a quality relationship with a pet and both increased empathy and an increased disposition toward prosocial behavior. The present study attempted to address both of these needs.

CHAPTER III METHODS

The primary purpose of this study was to evaluate a model (see Figure 1, p. 3) which predicts the following two sets of associations: First, between-get relationship quality and dispositional perspective taking, between dispositional perspective taking and dispositional empathic concern, and between dispositional empathic concern and dispositional personal behavior tendency. Second, reverse associations were predicted between dispositional perspective taking and dispositional personal distress, and between dispositional personal distress and dispositional personal behavior tendency, respectively.

Participants

Participants for this study were drawn from a group of approximately 180 undergraduate students enrolled in Personal Growth (PCO 2114), approximately 60 undergraduate students enrolled in General Psychology (CLP 1014), and approximately 30 undergraduate students enrolled in The Psychology of Personality (PPS 3004) at the University of Florida during the Summer II semester, 2000. All three courses typically attract a broad cross-section of undergraduates. Students who volunteered to participate in this study entered one name which would permit receipt a possible 100 points for the respective course(s).

Recommendations for Using College-Age Participants

Previous research suggests that there may be a positive connection between quality relationships with parents and capacity toward other humans. However, there is a very limited amount of the research which indicates a need for additional scientific investigation. Additionally, almost all of these few studies suggesting the existence of such a relationship have focused on children and younger adolescents, for which reliable and valid self-report measures of capacity are largely unavailable, thus calling into question the validity of the results. Valid and reliable self-report capacity scales are available for college students, so it makes sense to first establish in a more rigorous fashion whether a relationship does indeed exist, using a young adult population, and then to develop valid methods of assessing this relationship among younger adolescents and children. Nothing in the published research suggests that the effect is limited to any particular age group, but establishing maternal sibling relations

Additionally, there is solid research evidence indicating that family-of-origin structure and childhood development variables influence personality characteristics present in young adults and beyond. For example, adult children of families whose members tend to be emotionally unavailable to each other or do not connect much with each other demonstrate significantly less ability to cope with acute situations (Hanson, Lindsay Murphy & Hyman, 1988). Late-life children from overprotective and controlling families often have difficulties dealing with stress when they grow up (Wahlman, Breffke-Kramer & Sorens, 1987) and parental divorce and loss of one or both parents due to death appear to decrease subsequent coping ability (Lopez, 1994; Lopez,

Campbell, & Witalons, 1988) and capacity for autonomy (Erikson, 1992) during adolescence. Physical and emotional symptoms of distress and lack of self-esteem among young adults have been associated with parents who overprotectively involved their children in their own psychological problems and families that were extended (Bog, Harvey, & Williamson, 1987; Harvey & Bog, 1994; Harvey, Cury, & Bog, 1991). On the other hand, adults who grew up in families that were close-knit and whose members supported individual change and development show an increased ability to cope with stress (Steinert, Szatim-Kuruc, & Sarnat, 1997).

Other research indicates that trait levels of positive affect remain very stable from adolescence to old age (Charles, Reynolds, & Gec, 1985), and that trait extraversion and trait neuroticism are related to positive affect and negative affect, respectively, from as early as eight years old to old age (Watson & Tellegen, 1990). Thus, if involvement to perpetuate adolescent days have an effect on personality constructs such as capacity and potential behavior tendencies, these effects are likely to endure throughout the life span.

Measures

Participant Demographics

A Demographic Information Questionnaire, constructed by the principal investigator, was administered to collect the following basic demographic information: gender, age, race, college major, and highest education completed (see Appendix A for a copy of the Demographic Information Questionnaire).

Impersonal Reactivity

The Impersonal Reactivity Index (Davis, 1983) was developed to measure the multidimensional nature of dispositional empathy, in that it assesses both the cognitive and emotional aspects of empathy (past prior measures focused on either cognitive or emotional components, but not both). The Impersonal Reactivity Index consists of 28 self-report questions which measure four subfactors: perspective taking, fantasy, empathic concern, and personal distress (see Appendix A for a copy of the Impersonal Reactivity Index). For each item, respondents choose an item rating from a five-point Likert scale ranging from 0 (does not describe me well) to 4 (describes me well).

Each subfactor on the Impersonal Reactivity Index consists of seven items, all subfactor items are randomly ordered throughout the entire inventory. The *Perspective-Taking* scale measures other-oriented feelings of sympathy and concern for unfortunate others" (Davis, 1983a, p. 114). An example item from this scale is "When I see someone being taken advantage of, I feel kind of protective towards them" (Davis, 1983, p. 4). The *Perspective-Taking* scale measures the respondent's "tendency to spontaneously adopt the psychological point of view of others" (Davis, 1983a, pp. 113-114). An example item from this scale is "Before criticizing somebody, I try to imagine how I would feel if I were in their place" (Davis, 1983, p. 4). The *Fantasy* scale measures the respondent's "tendency to transpose themselves imaginatively into the feelings and actions of fictional characters in books, movies, and plays" (Davis, 1983a, p. 114). An example item from this scale is "I really get involved with the feelings of the characters in a novel" (Davis, 1983, p. 4). Finally, the *Personal Distress* scale measures "self-concern"

feelings of personal hostility and anger in inter-personal settings" (Davis, 1980a, p. 114). An example item from this scale is "I sometimes feel helpless when I am in the middle of a very stressful situation." (Davis, 1980, p. 9). The Perspective-Taking and Fantasy subscales have both been found to assess a cognitive facet of empathy (Davis, 1981a), with the former measuring an externally-oriented ability and the latter measuring an internally oriented skill. The other two subscales (Empathic Concern and Personal Distress) are reported to address the emotional dimension of empathy (Davis, 1981a), with the Empathic Concern subscale tapping an externally directed component of emotional empathy, and the Personal Distress subscale addressing an internal aspect of emotional empathy.

Items are rated on the Interpersonal Sensitivity Index on a seven-point scale that endorsement indicates higher levels of empathy (e.g., "Before criticizing somebody, I try to imagine how I would feel if I were in their place", Davis, 1980, p. 8) whereas non-endorsement indicates lower empathy levels (e.g., "If I'm sure I'm right about something, I don't waste much time listening to what people's arguments." (Davis, 1980, p. 8). These latter items are reversed scored, such that higher scores indicate greater empathy. The instrument is scored by adding up the ratings within each subscale which were endorsed by the respondent (pre-item scores are converted as follows: a 4 becomes a 0, a 3 becomes a 1, a 2 remains a 2, a 1 becomes a 3, and a 0 becomes a 4). Scores on each subscale can range from zero to twenty-eight. A low numeric score indicates the respondent reports low levels of the measured construct. A high score indicates that the respondent reports high levels of the measured construct.

Subscale scores are not meant to be aggregated because the constructs measured by each of the subscales measure a discrete and separate component of empathy (Davis, 1980). Thus, computing a overall Interpretated Sensitivity Index score is not appropriate. However, reports on each of the subscales can be compared to one another to provide a more precise and complete view of the nature of respondents' empathy data would be obtained if the subscales could be aggregated.

For the purposes of this study, only the Perspective Taking, Personal Distress, and Empathic Concern subscales of the Individual Sensitivity Index were used, because these three subscales relate to the aspects of empathy being studied. Nevertheless, the entire Individual Sensitivity Index was administered because "taken together" items on the statements are worded such that participants are not likely to ascertain precisely what is required to measure. Thus, by administering the entire Individual Sensitivity Index, it was less probable that respondents would perceive the true intent of the measure, thereby reducing the chance of measurement error.

The Interpretated Sensitivity Index has satisfactory internal consistency reliability, with a statistical alpha coefficient of .71 for the Empathic Concern subscale (Davis, 1980). The test-retest reliability for the Empathic Concern subscale is .70 (Davis, 1980). Findings tend to agree significantly higher than scales on all four scales (Davis, 1980), however, virtually all empathy measurements exhibit this difference between scales (Davis, 1980). Based on the results of several studies taken together, the Interpretated Sensitivity Index has been shown to have substantial construct validity. For instance, in an article describing the development of the instrument, Davis (1980) reported that the

underlying factor structure remained stable when different sample groups were given the measure on several different occasions. In support of the multidimensional nature of the Interpersonal Reactivity Index, Batson and Davis (1992) found that, as predicted, female college students who scored high on the Interpersonal Reactivity Index's Perspective-Taking subscale were more accurate at identifying others' self-descriptions by watching video tapes of target participant interactions that were written who scored low on the Perspective-Taking subscale. Additionally, high scores on the other three subscales were not associated with accuracy. Thus, as would be expected, the subscale of the Interpersonal Reactivity Index that measures an internal aspect of cognitive empathy (the Perspective-Taking subscale) was better than the other three subscales at predicting accurate assessments of others' self-descriptions.

Davis (1983a) reported additional support for a multidimensional view of empathy based on the results of a study that focused on the relationship between emotional empathy, cognitive empathy, and helping behavior. As predicted, personal responses depended on participants' level of emotional empathy rather than cognitive empathy. Further, Davis (1983a) found that higher levels of emotional empathy were associated with helping behavior even when participants could easily escape from the situation (i.e., choose not to help with no negative consequences to themselves).

In a study of how the four subscales of the Interpersonal Reactivity Index relate to other related constructs, Davis (1983a) found a positive correlation between the four IRI subscales and three equivalent measures of empathy, as predicted. Other research findings that provide construct validity support for the Interpersonal Reactivity Index include studies

by Benson, Bolles, Covert, and Neuman-Brosfeld (1986), Davis, Hall, Young, and Wilson (1987), Davis and Gallucci (1987), Fossiani, Davis, and Young (1987), Hall, Van Tynen, and Wessels (1987), and Rosen, Gruber, and Lennerton (1984).

Human-Animal Relationship-Quality

The *Lexington Attachment to Pets Scale* (Johnson, Garity, & Sullivan, 1991) was developed specifically to improve upon the psychometric properties of existing measures measuring the quality of the human-animal relationship (see Appendix A for a copy of the *Lexington Attachment to Pets Scale*). Additionally, past prior measures had used domestication non-domestic samples for their development and psychometric testing (Johnson, Garity, & Sullivan, 1991). Two-personal versions of the *Lexington Attachment to Pets Scale* were constructed previous to the current study (see Sullivan, Johnson, Garity, & Marx, 1990; Sullivan, Marx, Garity, & Johnson, 1988; Johnson, Garity, and Sullivan (1992) incorporated items from the two earlier versions and from several other existing scales, emphasizing questions that appeared to measure the emotional salient of human-animal relationships. Additionally efforts were made to include items measuring low-quality relationships so that a wider range of human-animal relationship quality could be measured (Johnson, Garity, & Sullivan, 1992).

Respondents answer the questions of the *Lexington Attachment to Pets Scale* in reference to the relationship they are (or is) the most significant in terms of emotional attachment. Example questions are "Quite often I consulted (or confide) in my pet" (Johnson, Garity, & Sullivan, 1991, p. 147) and "I enjoyed (or enjoy) sharing other people pictures of my pet" (Johnson, Garity, & Sullivan, 1991, p. 142). For each of the

items on the Inventory, respondents indicated one of the following five ranges: *Strongly Disagree*, *Somewhat Disagree*, *Sometimes Agree*, *or Strongly Agree*. A total score is derived by summing all 24 responses using the following scale: *strongly disagree* = 0, *somewhat disagree* = 1, *somewhat agree* = 2, and *strongly agree* = 3 (raw items are reverse-scored). Thus, scores range from 0 to 72. High total scores indicate that the respondent reports high levels of quality in terms of their most significant relationship with a pet animal.

The current version of the Lexington Attachment to Pets Scale was developed, refined, and evaluated using a random sample of 402 adults who were recruited by telephone (Johnson, Garity, & Stallones, 1992). Participants responded to 42 items about quality of human-animal relationships. Also assessed were data on pets in the household and participant demographics. Mean age of participants was 63 years, ranging from 18 to 83 years. The participant sample was composed of 59% females and 41% males; 94% of the sample were Caucasians.

The standardized alpha coefficient for the 42 initial items on the Lexington Attachment to Pets Scale (Johnson, Garity, & Stallones, 1992) was .907, which is very high. However, in the interest of designing as short a questionnaire as possible, items were eliminated and further analysis conducted, resulting in the current 24-item version, which has a standardized alpha coefficient of .938—almost identical to the longer version. Thus, the 24-item scale has a high degree of internal consistency reliability.

A principal axis factor analysis of the final version of the Lexington Attachment to Pets Scale (Johnson, Garity, & Stallones, 1992) revealed three factors that accounted

for 40.8% (4.4%) and 5.1% of the overall variance, respectively. As the items on the first factor (Cronbach's alpha = .80) appeared to measure basic aspects of attachment to pets, this factor was labeled *General Attachment*. The second factor (Cronbach's alpha = .82) was labeled *People Substituting* because the items seemed to indicate that the pet played an important psychosocial role in the caretaker's life (much like a family member or friend). Finally, items on the third factor (Cronbach's alpha = .86) appeared to relate to the status of pets in general, and was therefore labeled *Against Rights/Owners' Welfare*.

As a group, respondents who reported that a dog was their favorite pet had significantly higher scores on the Lexington Attachment to Pets Scale (Johnson-Gentry, & Sullivan, 1992) than did respondents who indicated their favorite pet was a cat. However, the actual difference between the mean scores for these two groups was 4.1, which is only about 4% of the overall range of possible scores on the scale. Thus, this difference may not be of practical significance. Furthermore, Johnson, Gentry, and Sullivan (1992) also conducted a correlation analysis on the responses from these two groups, and found an association of .76, which indicates that there is a high degree of overlap in the scale measurement of relationship quality with these two types of pets.

Although Johnson, Gentry, and Sullivan (1992) did not establish construct validity on the Lexington Attachment to Pets Scale using the traditional method of correlations with other human-pet relationship-quality measures, they did address this issue in two ways. First, they found a strong correlation (.44) between respondent scores and anonymous ratings of relationship quality. Second, the pattern of associations between scores on the Lexington Attachment to Pets Scale and various responses

characteristics (such as gender, race, age, education, and income) was precisely the same as the pattern found using several other human-pet relationship-quality instruments. The researcher acknowledges that further statistical validation studies are needed.

Personal Behavior Disposition

The Personal Personality Battery is a 30-item self-report instrument that measures two aspects of personal tendencies (Pomeroy, Jones, Pomeroy, Pomeroy, Conger, & Fairfield, 1993). The first factor, labeled *Other Directed Disposition*, measures the degree to which respondents take responsibility for, and feel responsible toward, others in social settings. In other words, this factor measures the personal cognitions and feelings that likely motivate (and therefore predict) prosocial behavior. The second factor, called *Selfishness*,¹ is concerned with personal behavior tendencies (see Appendix A for a copy of the Personal Personality Battery).

Standardized alpha coefficients for both factors on the Personal Personality Battery (Pomeroy et al., 1993; Pomeroy, Pomeroy, Conger, & Fairfield, 1993) ranged .80, and test-retest reliabilities for the two scales were .77 and .83, respectively (Pomeroy, Pomeroy, Conger, & Fairfield, 1993). Several studies (e.g., Pomeroy & Pomeroy, 1993; Miller, 1994; Pomeroy & Pomeroy, 1993a; Pomeroy & Pomeroy, 1993b; Shively, Shively, Rodderson, & Chensell, 1994) have shown that the Personal Personality Battery has strong internal

¹ Although the second inventory was administered to participants of the proposed study at a time second factor that is of personal relevance to this study, because of its consistent toward personal behavior tendencies (indeed, the first factor accounts of items taken from the Interpersonal Reactivity Index, Davis, 1983).

reliability and construct validity. The original version of the Prosocial Personality Battery contained 40 items. But in the interest of reducing administration time, it was reduced to the current 30-item inventory, which was reevaluated with a negligible reduction in its psychometric properties (Pomeroy, in press).

Social Desirability

Levels of self-reported empathy and prosocial behavior have been found to be related to a desire to present oneself in a positive light (Cohen, Allen, & Schwartz, 1999; Eisenberg, Fabes, Miller, Futo, Shell, Mooley, & Kover, 1999; Eisenberg, Miller, Schaller, Fabes, Futo, Shell, & Kover, 1997; Pomeroy, Finkelstein, Granger, & Feickel, 1995). In order to test this possibility, a short form of the Marlowe-Crowne Social Desirability Scale (Marlowe & Crowne, 1962) was administered. Originally developed by Crowne and Marlowe (1960), various short-forms have been constructed to reduce administration time. The short-form version used in the present study consists of 38 true-false items taken from the 33 items on the original form (see Appendix A for a copy of the short form version of the Marlowe-Crowne Social Desirability Short Form used in this study). Representative items include "I never hesitate to go out of my way to help someone in trouble" (Rayburn, 1982, p. 121) and "I always practice what I preach" (Rayburn, 1982, p. 121).

Fincher and Fack (1998) performed psychometric testing procedures on the short form version of the Marlowe-Crowne Social Desirability Scale used in the present study.³ Using LISREL (a structural equation modeling computer program), Fincher and Fack performed confirmatory and exploratory factor analyses. Finding that the 30-item version developed by Marlowe and Crowne (1972) has high construct validity as that it correlates extremely well with the original instrument ($r = .94$), has high internal consistency (Cronbach's $\alpha = .88$) and the data fit the model very well (adjusted goodness of fit index: Steining & Larssen, 1998 = .949).

Subjective Well-Being

Subjective well-being is that measured by a combination of positive affect and negative affect (e.g., Bradburn, 1969). Two levels of positive and negative mood have been found to be associated with personality traits such as trait, emotional stability, and positive affectivity (DeNeve & Cooper, 1998), extroversion (Charles, Reynolds, & Gatz, 2001; Gross, Sutton, & Kessler, 1998; Rutter & Lerner, 1998), and neuroticism (Charles, Reynolds, & Gatz, 2001; DeNeve & Cooper, 1998; Gross, Sutton, & Kessler, 1998; Rutter & Lerner, 1998). Additionally, people who are generally happy tend to form more positive impressions of others, and make more favorable judgments of others (Fergus & Brown, 2001). Thus, positive and negative mood may also account for some of the variance in other personality traits such as empathy and prosocial behavior tendency.

³ Fincher and Fack (1998) also tested other existing short form versions as well as revised versions (constructed by Fincher and Fack, 1997) of each of the existing versions

Therefore, the Affect Balance Scale (Fincham, 1989) was administered and the resulting scores were combined with all other measures measured as the person study.

The Affect Balance Scale is a 10-item measure of self-perceived subjective well-being. It was constructed by combining the Positive Affect Scale and the Negative Affect Scale, both of which are 5-item instruments developed by Fincham (1989). A sample item assessing negative affect reads: "During the past few weeks, did you ever feel very lonely or estranged from other people?" (Fincham, 1989). A sample item that measures positive affect inquires: "During the past few weeks, did you ever feel pleased about having accomplished something?" (Fincham, 1989). Respondents are instructed to answer yes or no to each of the ten questions (see Appendix A for a copy of the Affect Balance Scale).

The Affect Balance Scale is scored by first assigning a value of one point for each yes response and zero points for each no answer. *Positive* values are then summed separately for the five positive affect questions (even-numbered items) and the five negative affect questions (odd-numbered items). Next, scores of 4 and 5 on each subscale are collapsed and assigned a value of 4. This is done because during the development of the instrument it was found that scores on both subscales were positively skewed (i.e., scores of 5 on the negative subscale were extremely rare, and scores of 5 on the positive subscale were fairly common); collapsing the two most extreme scores on each subscale reduced the skewness to acceptable levels and did not adversely affect the psychometric properties of the overall measure (Fincham, 1989). Finally, scores for the two subscales are subtracted from each other. Thus, full-scale scores can range from -4 to +4, with higher scores

selecting) higher self-perceived quality of life. Bradburn (1969) recommends adding five points to all full-scale scores so that the possible range of scores includes only positive, non-zero values (+1 to +9).

The scores on the two subscales (positive affect and negative affect) have been found to be uncorrelated (Warr, Bailey, & Barnetson, 1983), which confirms that they measure discrete and independent aspects of global well-being. The full scale has adequate construct validity because it correlates better with self-reported happiness than does the correlation of the negative sub-scale scores with self-reported happiness or the correlation of the positive sub-scale scores with self-reported happiness, respectively (Bradburn, 1969). Construct validity was established by comparing the two subscales to physical symptoms and anxiety (Folstein, 1984). Findings showed that, as expected, the negative affect subscale scores correlated well with anxiety and physical symptoms but were uncorrelated with positive subscale scores. Christie and Rando (1972) reported reliability coefficients of .62 and .64 for the two subscales, respectively, and Bradburn (1969) reported test-retest reliability coefficients of .83 and .81 for the two subscales, respectively.

Procedures

To recruit participants for this study, the principal investigator attended one class meeting of Personal Growth (PCO-1714), Abnormal Psychology (CLP-1144), and The Psychology of Personality (PYE-1064) during the Summer II semester, 2004, at the University of Florida. At the end of each class, the researcher asked for volunteer participants using the following narrative:

Good morning/evening. I am here to ask for volunteers for a study that is looking at the relationships people have with their pets and the impact these relationships have on pet owners. However, even if you have never owned a pet, you are eligible to participate in the study. In return for participating in this study, you will receive one extra credit point toward the possible 150 points you can earn in this class. However, participation in this study is completely voluntary, and you may withdraw your participation at any time without being penalized in any way. Additionally, participation in this study is not a required component of this course. If you volunteer to participate in the study, you will be asked to read and sign a consent form, and then respond to a series of questions about your attitudes, feelings, thoughts, and behavior, and provide some demographic data. All of this will be done at the present time, and it will take you about 10 minutes to complete everything.

Because you will not put your name on any of the materials in the packet, all of the information you give will be completely anonymous. Additionally, all information reported from this study will be in aggregate form, so there is no way you can be individually identified. Therefore, please be honest when you answer the questions.

Now, those of you who would like to participate in this study, please remain in your seat. If you do not wish to participate in this study, you are free to go now. [Narrator gestures toward the door and waits until those who wish to leave, do so. Then, the narrator continues.]

Now I will give each of you two consent forms and a large manila envelope. Please read and sign one of the consent forms, and keep the other for yourself. They are stapled together, so just pull them apart. Once you have signed one of the consent forms, open the envelope and take out the packet. Open the packet, and the two survey sheets contained inside. Read and follow all of the directions carefully, and raise your hand if you have any questions. While you are completing the questionnaires, I will come around the room and collect your consent forms. After you finish completing the questionnaires, put all of the materials back in the manila envelope and give the packet to me on your way out the door. Thank you very much for your attention and your participation.

The principal investigator then answered all questions, distributed the materials to those persons remaining in the room, collected the consent forms after they were signed, and collected all materials after they were completed.

To control for possible order effects, three versions of the questionnaire packet were developed, with each version having a different premeasured order of the items. However, in each version the demographic questions were presented last so

as to reduce the possibility that respondents would feel self-conscious as a result of focusing on their own demographic characteristics, and thus not answer the remaining questions truthfully.

Analysis

A preliminary correlation analysis matrix was constructed to determine whether any of the five research-question variables (social desirability, subjective well-being, age of participant when their closest pet-relationship occurred, the type of pet the closest relationship was with, and participant gender) were significantly related to quality of pet relationship, trust perspectives taking, trust perspective reasons, trust personal desires, and trust personal behavior tendency, respectively. Research-question variables found to be significantly related to any of the five variables in the tested model were included in subsequent analyses.

The study hypotheses originating from the model depicted in Figure 1 (see p. 7) were tested using a structural equation modeling technique. The major advantage of using structural equation modeling in this case is that a specific pattern of associations could be tested using all of the variables in the model at the same time. For example, the three sub-components of empathy (perspective taking, empathic concern, and personal distress) were able to serve simultaneously as predictor variables and outcome variables—which is not possible when using regression or ANOVA procedures.

Structural equation modeling techniques such as the one used in the present study generally require larger sample sizes than do ANOVA or regression analyses. Although there is no absolute formula for selecting sample sizes, an acceptable sample size is one

where the ratio between the number of participants and the number of parameters in the model is about 10:1 (Kline, 1998). Generally speaking, when participant-to-parameter ratios fall to less than 5:1, the results may not be valid due to violations of statistical assumptions (Kline, 1998). In the present study, the model that was evaluated has a total of 13 parameters, which would necessitate a sample size of at least 130. However, there was a possibility that up to three of the covariance-quarant variables (those involving continuous data) would need to be added to the model, which could have increased the number of model parameters to around 20. Therefore attempts were made to collect data from about 200 participants.

As with all structural equation modeling techniques, the first step in analyzing a model is to estimate how well the model represents for the data, using procedures such as maximum likelihood estimation (Kline, 1998). If the model does not fit the data (as often happens), the model must be respecified based on the study hypotheses (Kline, 1998). This iterative approach was used in the present study to initially attempt to confirm the hypothesized model, and then, if needed, perform post-hoc exploratory analyses on one or more respecified models.

CHAPTER IV RESULTS

This chapter presents the nature of the data collected for this study and the results of the analyses that were performed on the data. First, descriptive information relative to the study's sample and variables is presented and briefly discussed, followed by a short discussion on the analyses involving the five research-questions. Next, the structural equation modeling analyses used to test the hypotheses and research questions relevant to this study are delineated along with the results of these analyses. The chapter culminates in the presentation and discussion of the process by which the original model was altered and retested, and an examination of the resulting model that was deemed a viable alternative to the original model.

Nature of the Sample

Approximately 200 students were asked to participate in this study. One hundred eighty-one (90.5%) agreed to participate and completed the study questionnaire. Although it is not known precisely why roughly 20-people declined participation, there were no indications that the reasons for non-participation were systematic or non-random. It is possible that those people who chose not to participate did not need the extra credit being offered, had other commitments to attend to, or both.

Of the 114 students who completed the study questionnaire, one participant's data were eliminated from all analyses due to a large quantity of missing data (only about 25% of the items were answered). Another student participant was excluded from all analyses because of obviously invalid responses (e.g., endorsement of the same level of response for two entire scales and major portions of several other scales—including reverse-coded items). Additionally, five participants indicated that they had never had any kind of relationship with a pet and therefore did not complete the pet demographics sheet or the Lexington Attachment to Pets Scale. The data from these participants were also excluded from all analyses. Together, these seven participants composed approximately five percent of the total number of study participants, which is a proportion that is small enough to not pose any appreciable danger to the validity or reliability of this data, or the size of the sample.

Descriptive Sample Data

After elimination of seven participants' data as explained above, the overall sample size consisted of 107 participants. Demographic data variables included participants' gender and the type of pet to which participants indicated they were (or were most emotionally attached). These data are summarized in Table 1. From this table it can be seen that almost exactly two-thirds (64.7% or 69 of 107) of the sample is comprised of females, while 33.2% ($n = 35$) are males. Additionally, about two-thirds (64.7%) of respondents indicated that their current pet relationship was (or is) with a dog, whereas only 22.4% reported that their current pet relationship was (or is) with a cat. Although this distribution differs markedly from pet popularity distributions (which rank both dogs as

Table 3

Descriptive Sample Statistics for Five Important Demographic Variables

Variable	n	Percent
Participant Gender		
Female	116	66.7
Male	58	33.3
Type of Pet/Closest Relationship: Which Was		
Dog	115	66.1
Cat	38	22.6
Hamster, Gerbil, Guinea Pig	7	4.0
Horse	4	2.3
Rabbit	3	1.7
Fish	2	1.1
Bird	2	1.1
Other	2	1.1

the most popular pet, followed by cats and dogs, respectively), it is readily understandable why very few participants reported that fish were the type of pet they were most attached to emotionally. Further, it is not very surprising that most respondents tended to be emotionally closer to pet dogs than pet cats, since dogs are usually more expressive and interactive with humans than are cats. Besides, this study focused specifically on

emotional attachment to pets rather than pet popularity per se. Taken together, the remainder of the pet-appeal is... rather than dogs and cats that participants reported as being their closest account for only 11.3% of the total sample.

Continuous demographic data variables pertinent to this study include participant age and participants' age at the time their most significant pet relationship began. Table 2 presents basic statistical information on these two variables. Two general observations of note can be made about the data contained in Table 2.

Table 2

Descriptive Sample Statistics for Two Continuous Demographic Variables

Variable	n	Mean	Median	Mode	SD	Range
Participant Age	173	20.74	20.00	20	3.49	18 - 29
Participant Age When Closest Relationship With a Pet Began	174	12.82	12.00	18	6.46	04 - 43

First, although the minimum participant age is 18, the next highest age in the sample is 24 (not shown). Further, while not depicted in Table 1, the vast majority of participants (88%, $n = 153$) range from 18 to 22 years of age (not participants did not indicate her age). The participant whose age is reported as 39 obviously represents an outlier, and this case was therefore excluded from all further analyses. Second, the data describing participants' age when their closest pet relationship began are centered

somewhat higher than was anticipated—with a mean of 12.62, a median of 12.08, and a mode of 14 years of age, respectively (the mean, median, and mode for this variable were all expected to be approximately eight years of age). One participant did not begin her closest pet relationship until age 48, which denotes another outlier since this value is more than twice the value of the next highest data point in this distribution. Nevertheless, this particular response was made by the participant whose data had already been excluded from further analysis.¹

Research-Question Analysis

The research question posed in conjunction with this study concerns the possible interactive associations between five variables: *perceived desirability*, *subjective well-being*, *age of participants when their closest pet-relationship occurred*, *participant gender*, or the *type of pet with which participants had—in their—their closest relationship*; and the variables in the hypothesized model (*quality of pet relationship*, *trust propensity*, *belonging*, *non-anxious concern*, *trust propensity*, *distress*, and *trust propensity* *belonging tendency*). Of these five research-question variables, three are composed of continuous data (*perceived desirability*, *subjective well-being*, and *age of participants when their closest pet-relationship occurred*). As a first step in addressing the research question pertaining to these three variables, a correlation matrix was constructed to determine if any of these (demonstrated) significant univariate associations with any of the five variables contained

¹The other participant reported being older than 20 years of age—so could not possibly have had their closest pet relationship at age 48.

order model being tested (interim-pet relationship quality, perspective taking, impulse control, personal distress, and prosocial behavior tendency). Table 3 presents the Pearson correlation matrix for these eight variables.

Table 3

Pearson Correlation Matrix Showing Interrelationships Between Eight Variables

Variable	PT	EC	PD	PBB	SDB	ABS	ARB
LAPS	.00	.00	-.01	.14	.02	-.04	.01
PT	—	.32**	.08	.00	-.36**	.04	.09
EC		—	.17*	.08	-.33**	.20	.03
PD			—	-.02**	.15*	-.12	-.05*
PBB				—	.34**	.13	.10
SDB					—	-.26**	.01
ABS						—	-.06

Note. LAPS = Lexington Adjustment to Pain Scale; PT = perspective taking.

EC = impulse control; PD = personal distress; PBB = prosocial behavior tendency.

SDB = Social Desirability Scale; ABS = Affect Balance Scale; ARB = rat of participants when closest pet relationship began.

* $p < .05$. ** $p < .01$.

Visual inspection of the data in Table 3 reveals that social desirability is the only continuous data measure-positive variable that is significantly associated with any of the

five variables from the model being evaluated. Within this sample, social desirability is significantly and strongly related to preposition taking (Pearson $r = .31, p < .01$), computer anxiety (Pearson $r = .31, p < .01$), and personal Internet tendency (Pearson $r = .34, p < .01$), and negatively associated with personal distress (Pearson $r = -.14, p < .05$) in a positive direction. Therefore, social desirability was included in the structural equation modeling procedures; the results of which are presented and discussed later.

As the other two research-question variables (partner's gender and type of pet with which participants had—or have—their closest relationship) consist of categorical data, they were tested by conducting a structural equation modeling procedure for each category of each respective variable. According to Klein (1998), if the resulting models for each category of a specific variable do not differ significantly from each other in the model wherein the categories are collapsed, significant differential associations relative to that specific variable are not present. Conversely, if the models for each category of a variable do differ significantly from each other in the model wherein the categories are collapsed, differential associations are present, and these differences must be further estimated and then interpreted. These analyses and results are presented and discussed subsequently in the results concerning the model that was determined to be the best alternative to the original, hypothesized model (Figure 1, page 36).

Data Preparation for Structural Equation Modeling Procedures

Structural equation modeling procedures were used to evaluate the study hypotheses, which predict a specific context in which three components of empathy

examine the relationship between human-pet relationship quality and perceived tolerance sensitivity (see Figure 1, p. 7). However, before performing structural equation modeling procedures, the sample data were examined to ensure that prerequisite statistical assumptions about the nature of the data were not being violated.

Four sample data issues were addressed before conducting the planned test explanatory structural equation modeling procedure. First, the raw data were inspected for missing or constant number of missing values. Although the structural equation modeling software program used for this study uses a sophisticated technique for estimating missing values, the results are only valid if the amount of missing data is less than ten percent of the overall sample (Kline, 1998). The participants did not respond to all of the questionnaire items, but none were listed as missing to more than a total of two questions. Therefore, the amount of missing data is far less than ten percent of the overall sample, and no adjustments to the data are necessary regarding this issue.

Second, the existence of outlier data points was thoroughly affect the analysis process and the validity of the results. Univariate outliers were identified through the use of distribution statistics and histograms. The only outlier in any of the variable data used in the structural equation modeling procedures was in the variable measuring the age of participants when their current pet relationship began. As discussed earlier, the participant's data were excluded from further analysis. Multivariate outliers were identified by inspecting bivariate scatter plots of variables adjacent to each other in the model being evaluated. No problematic data points were revealed during these

requirements, on the prerequisite assumptions concerning multicollinearity and multicollinearity problems were met.

A third prerequisite sample-size issue that must be addressed when employing structural equation modeling procedures concerns multicollinearity, which occurs when two variables are very highly correlated. Kline (1998) recommends a lowest correlation of no more than .85 to ensure that multicollinearity does not distort estimates and theoretical calculations made during the structural equation modeling process. The largest correlated between any two adjacent variables in the model being tested is between personal distress and personal behavior ($r = .82$). The magnitude and direction of this correlation are not very surprising because about half of the score for the personal behavior variable is derived from the mirrored personal distress score. Thus, while there is a fair amount of overlap between personal distress and personal behavior, and their statistical correlation is close to the recommended upper limit, these two variables are not redundant and the inclusion of both of them in the same model would not pose any statistical calculation problems. No other correlations between adjacent variables in the evaluated model approached a correlation of .85, indicating that multicollinearity was not a problem in this data sample.

Finally, common variance used in structural equation modeling analysis must meet minimum requirements. Kline (1998) recommends that the absolute value of variance and multicovariance diagonals for each variable should be less than 3.0, while the bivariate absolute values should be less than 18.0. The largest absolute value of variance diagonals among the latent variables is .89, and the largest covariance bivariate absolute

value is .14. These values are well within the recommended limits. Multivariate normality tests are routinely computed by the structural equation modeling software which was used for this study, the largest multivariate skewness was 2.19, and the largest kurtosis value was 3.16 neither of which violate the normality assumption.

Structural Equation Modeling Procedures

Amos 4.0 (Arbuckle, 1995) structural equation modeling software for personal computers was used for all model analyses. Amos 4.0 uses a variation of maximum likelihood estimation called full information maximum likelihood estimation. The major difference between maximum likelihood estimation and full information maximum likelihood estimation is in the way that the latter handles missing data. As the name suggests, Amos's full information maximum likelihood estimation method utilizes all observed data information to impute missing data rather than using only some of it, as is done by many other maximum likelihood estimation methods (Fuchs, 2000). Table 4 shows means and standard deviations for all variables used in the structural equation modeling analyses that follow.

Before proceeding further, some comments are in order concerning statistical measures used to indicate how well a given structural equation model fits the sample data. There is no grading or definitive way to evaluate the fit of a structural equation model. The Pearson chi-square statistic (χ^2) is possibly the most commonly reported fit index (accompanied by the degrees of freedom on which it is based and a significance

¹ Sometimes called the minimum discrepancy (GFI).

Table 4*Means and Standard Deviations for Six Path-Analysis Variables*

Variable	Mean	SD	Range
Pro. Relationship-Quality	40.51	14.04	1–73
Perspective Taking	18.17	4.43	4–28
Empathy Concern	25.23	4.24	8–28
Perceived Distance	9.96	4.65	0–20
Prosocial Behavior	28.79	6.31	22–38
Social Desirability	5.86	1.95	1–10

related. In the case of structural equation modeling, chi-square values that are statistically significant are not desirable because they indicate that the model being tested is significantly worse than a similar model that fits the data perfectly (commonly called the saturated model). Thus, when using the chi-square statistic there is no way of knowing exactly how well a model fits the data—only that it is, or is not, significantly different from a possible model with perfect fit. Additionally, the chi-square statistic is affected by sample size such that it is difficult not to attain significance at larger sample sizes. As the sample size obtained for this study ($N = 174$) is considered somewhat large, the chi-square statistic alone is definitely not the most useful measure of fit.

To gain a more comprehensive and accurate perspective on how well the models being evaluated fit the data on which they are based, therefore, three additional measures of fit are reported for each tested model. The first, the chi square value divided by its degrees of freedom (χ^2/df), measures the sample-size effect. There is general agreement that values of this fit index that are less than or equal to 2.0 indicate good fit, whereas values greater than 2.0 but less than 3.0 imply acceptable fit (Kline, 1998). Another approach to assessing model fitness is to compare the specified model to a model with very poor fit (variously called the baseline, independence, or null model). The comparison method index reported here is Bollen's (1984) relative fit index (RFI). An RFI of greater than .90 indicates at least a good fit, and as the relative fit index value approaches 1.0, the level of fitness becomes very good. The third model evaluation index reported in this study is Browne and Cudeck's (1993) root mean square error of approximation (RMSEA) of the population. An RMSEA value of $\leq .08$ indicates a very close-fitting model, whereas a root mean square error of approximation value greater than .10 indicates the model fits the data poorly.

As a result of the finding that social desirability significantly relates to several variables in the model hypothesized for this study (see Figure 1, page 9), it was included in that original model with direct paths to the four variables with which it was significantly associated (perspective taking, corporate reputation, personal distress, and prosocial behavior). It should be noted at this point that, conventionally, when two or

more-regressive were also not present in a model (as is the case in this model) and there is no theoretical basis for hypothesizing an association between them in either direction, unanalyzed paths are drawn between them. This was noted above, but because the resulting path coefficients was as close to zero ($r = .02$), social desirability and perceived relationship quality can be assumed to be unrelated, thereby eliminating the need for a path between them.

The first model tested, then, was the originally specified model with social desirability included (with paths concerning social desirability to perspective taking, empathic concern, personal distress, and prosocial behavior, respectively). The full information maximum likelihood method of assessing how well this model fit the data revealed a relatively poor fit ($\chi^2(5) = 17.85, p < .001$). The χ^2/df value for this model was 2.53, which is very close to a poor-fit evaluation. The relative fit index (RFI) was .59, which indicates that the analyzed model is 59 % closer to a similar model of perfect fit than to an independent model (having very poor fit). Finally, the root mean square error of approximation (RMSEA) for this model is .103, which means that the model fits poorly. Thus, taking all these fit indices together, this particular model does not appear to fit the sample data well, because three of the four indices suggest a poor fit. Figure 2 displays this model, along with path correlation coefficients (printed beside the corresponding path bars) and multiple determination coefficients (printed in parentheses above the top right-hand corner of rectangles containing variables to which the statistic

² Variables in a model that serve only as an independent variable



Figure 2

Model Specifying an Additive Effect of Per Relationship-Quality and Perceived Behavior, Mediated by Three Emotion Factors, with the Inclusion of Social Desirability

applied). For the sake of increased clarity, error terms representing all unexplained contributions to the variance of respective endogenous variables⁴ are not included in any of the presented path diagrams.

All of the following observations about the model presented in Figure 2 are extremely tentative, given the generally poor fit of the model as a whole. First, contrary to what might have been expected, social desirability is inversely related to perspective taking ($r = -.36$), suspicious concern ($r = -.18$), and perceived behavior ($r = -.13$) and is

⁴Variables serving here as either a dependent variable alone or as both an independent and as dependent variable.

positively related to personal distress ($r = .11$).² This suggests that respondents who scored high on the social desirability scale ($r = .46$ relative to social desirability bias) tended to score low on perspective taking, empathic concern, and prosocial behavior, respectively, and high on personal distress. Conversely, those who appeared to answer the questions honestly tended to score high on perspective taking, empathic concern, and prosocial behavior, respectively, and low on personal distress. Given this pattern of associations, social desirability apparently does not need to be in the model at all.

Another observation about the model in Figure 2 is that there is almost no association between perceived quality and perspective taking ($r = .04$), which is as direct opposition to one of the major purposes of this study. Nevertheless, there do seem to be moderate relationships between empathic concern and prosocial behavior ($r = .17$) and between perspective taking and personal distress ($r = .14$), although the latter relation is not in the expected negative direction. Additionally, a fairly strong relationship exists between perspective taking and empathic concern ($r = .47$), while the strongest association is between personal distress and prosocial behavior (and it is an inverse association, as predicted). However, caution must be taken when interpreting the meaning of the latter result because of the preliminary finding that personal distress and prosocial behavior are closely related and overlap in a moderate degree.

² Because all of the participants were the lowest of what was expected, the raw data were re-examined to ensure scored coding, labeling, and calculation of the social desirability data.

A final set of observations about the Figure 2 model pertains to the multiple conditional values of the variables serving as dependent variables. First, only about 12% of the variance in perspective taking is explained by pre-relationship quality. Second, social desirability and perspective taking explain about 38% of the variance in superior partners. Third, only about 3% of the variability in personal distress is accounted for by both perspective taking and social desirability. Finally, personal distress, superior partners, and social desirability together explain about 75% of the variance in personal behavior (although it is probable that personal distress accounts for most of this variance due the overlap between personal distress and personal behavior).

The next step in the analysis process was to remove the social desirability variable from the model, leaving the original hypothesized model (Figure 1, page 3). The fit indices for this model ($\chi^2(5) = 14.58, p = .013, \chi^2/df = 2.916, RMSEA = .067$) indicate that it fits the sample data only slightly better than the previous model with social desirability included in the model. Indeed, a chi-squared difference test comparing the models was not significant ($\chi^2_{\text{difference}}(1) = 1.27, p < .1, n.s.)$. A graphic representation of this model is shown in Figure 3, along with path correlation-coefficients and multiple correlation coefficients. Most of the path correlation coefficients in this model are about the same as their corresponding values in the previous model (Figure 2), with the exception of the path between perspective taking and personal distress. Indeed, although the actual value of the difference between these paths in the two models is only 3%, the proportion of the difference is 50%.

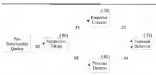


Figure 3

Original Model Specifying an Antecedent Between Per Relationship Quality and Personal Behavior (Mediated by Three Empathy Factors)

Another observation based on a comparison of Figure 2 and Figure 3 involves the difference in multiple correlations between the two models. In Figure 3, the amount of variance in prospective taking that is explained by per relationship quality is essentially zero, which means that social desirability accounted for all (.7%) of the variance in prospective taking in the model shown in Figure 2. On the other hand, differences in multiple correlations between the two models were very small with respect to personal distress, empathic concern, and prosocial behavior, respectively. In fact, these differences indicate that in the Figure 3 model, the amount of variability that social desirability accounted for was 4% of personal distress, 3% of empathic concern, and 2% of prosocial behavior, respectively, which confirms the removal of the social desirability variable from the model.

Given the relatively poor fit of the models depicted in Figure 3 and Figure 4 respectively, the reconfiguration of the Figure 3 model was altered substantially. Because pet relationship quality apparently is not related to perspective taking, it was removed as that it no longer preceded perspective taking. However, it was speculated that pet relationship quality might be directly related to both empathic concern and personal distress as well as directly to prosocial behavior. Although this direction was precepted, in part, by statistical means, it is also easily accommodated by the theoretical underpinnings of this study. The revised model (shown in Figure 6) was analyzed and found to have a good fit ($\chi^2(12) = 5.81$, $p = .12$; $\chi^2/df = 1.88$, $RMSEA = .07$). While this model is a significant improvement over the one presented in Figure 3 ($\chi^2_{diff}(2) = 8.99$, $p = .82$), it was improved even more by removing these paths:

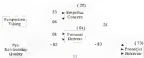


Figure 6
Model Specifying the Association Between Pet Relationship Quality and Perspective Taking, respectively, and Prosocial Behavior, Mediated by Empathic Concern and Personal Distress

The first two paths that were retained from the Figure 4 model are between pet relationship quality and cognitive concern and between pet relationship quality and personal distress. Both paths have correlation coefficients that are essentially equal to zero, suggesting no relationship. A third path that was eliminated is between perspective taking and personal distress. Not only is this path coefficient fairly low ($\gamma = .05$), but both pet relationship quality and perspective taking together account for only about 1% of the variance in personal distress.

The traditional method of testing structural equation models is to constrain the selected paths to zero, so that they can no longer be retained freely (Jöreskog, 1988). As a result, the constrained parameters' effects are required. Using this approach, the Figure 4 model was retained and then analyzed. The resulting model demonstrated good fit ($\chi^2(2) = 3.33, p = .18$), $g^2(4) = 1.70, .921 = .90$ (RMSEA = .04) and was found to be not significantly different from the previous (unconstrained) model ($\chi^2_{diff}(2) = 1.61, p < .7, n.s.$).

The retained model is depicted in Figure 5 along with parameter coefficients and multiple-correlation coefficients. Essentially, the retained model specifies a positive relationship between perspective taking and personal behavior which is mediated by cognitive concern, a direct and inverse relationship between personal distress and personal behavior, and a direct, positive relationship between pet relationship quality and personal behavior. Within the model there are two moderately small effects and two large effects. Pet relationship quality has a fairly small direct effect on personal behavior ($\gamma = .03$), while cognitive concern has a somewhat moderate effect on personal behavior,

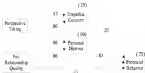


Figure 3

Model Specifying an Association Between Per-Relationship Quality and Perspective Taking, Responsively, and Prosocial Behavior, Mediated by Empathic Concern and Personal Distress, With Their Correlated Paths

controlling for perspective taking ($\beta = .13$). Perspective taking has a fairly strong direct effect on empathic concern ($\beta = .80$), and personal distress has a very strong, direct effect on personal distress ($\beta = .80$). However, as previously mentioned, this latter effect must be interpreted with caution because of the strong zero-order correlation between the two variables. Finally, perspective accounts for an estimated 38% of the variance in empathic concern, and empathic concern, personal distress, and per-relationship quality together explain an estimated 74% of the variance in prosocial behavior.

Since the model shown in Figure 3 is the most parsimonious of those tested, the other two research questions could then be addressed. One of those research questions

examines possible associations between participant gender and any remaining variables from the original model. The other focuses on potential correlations between type of pet reported to being emotionally closest and any remaining variables from the original model. To examine these research questions, the Figure 3 model was re-analyzed two separate times: once using only data on female respondents, and a second time using only

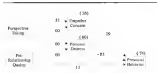


Figure 4

Model specifying an Association Between Perspective Taking and Pet Relationship Quality, Respectively, and Pet/Animal Behavior Mediated by Cognitive-Dissonance and Perceived Dissonance, With Three Paths-Constraint (Females Only, $n = 114$)

data on participants whose closest pet was reported to be a dog.⁴ The resulting model (shown in Figure 4) fit the data very well ($\chi^2(3) = 1.13$, $p = .967$, $g^2/df = 136$, $R^2 = .997$, $RMSEA = .000$), although all parameter estimates and explained variance estimates are

⁴Data on male respondents, and those indicating their closest relationship was with an animal other than a dog, could not be analyzed because there were too few cases in each respective category.

essentially the same in the model with all participants' data included. Thus it is not likely that being female results in differential response patterns due to gender is ignored.

Finally, Figure 7 shows the results of the Figure 5 model using only the data from dog owners. This model demonstrates very good fit ($\chi^2(3) = 4.73, p = .185, g^2/g^2 = 1.023, BFI = .953, RMSEA = .033$) although slightly less than the females-only model. Comparisons of parameter estimates and explained variance estimates provide slightly stronger inferences between perspective taking and empathic concern ($r = .58$) and slightly more variance in empathic concern explained by perspective taking ($R^2 = .34$). However, the magnitudes of the differences are not great enough to indicate an interaction effect based on participants whose closest pet was (or is) a dog.

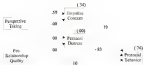


Figure 7

Model Specifying an Association Between Perspective Taking and Pet Relationship Quality, Indirectly and Prosocial Behavior, Mediated by Empathic Concern and Personal Distress, With Those Pet-Owners-Only (Dog Owners-Only, $n = 114$)

CHAPTER V CONCLUSION

This chapter summarizes and interprets the results of the study, identifies some limitations of the research design, provides suggestions and recommendations for future research on this topic, and outlines some general conclusions based on the present study.

Summary of the Results

The primary intention of this study was to evaluate a model specifying associations between pet relationship quality and prosocial behavior mediated by empathy. For the purposes of this study, empathy was measured as consisting of an initial empathic treatment (perspective taking) followed by an emotional experience that is primarily warm and compassionate (empathic concern) or uncomfortable and aversive (personal distress). In addition to the hypothesized model, research questions were posed concerning the effects that five variables (social desirability, subjective well-being, age of participant when their closest pet relationship occurred, participant gender, and type of pet to which participants indicated they were currently closest respectively, respectively) might have on the associations between variables outlined in the original model.

Three of the research questions (the effects of social desirability, subjective well-being, and age of participant when their closest pet relationship occurred) were addressed by visually inspecting the strength and significance of the respective bivariate correlations

between these three variables and the four variables in the hypothesized model. Only social desirability was significantly related to any of the variables in the hypothesized model. It was therefore included in the hypothesized model with paths specified between it and the variables to which it was significantly related (perspective taking, perspective concern, personal distress, and personal interest tendency, respectively). The other two research questions were answered by conducting separate structural equation modeling analyses using data from each of the subsamples of these two variables (e.g., data from male respondents versus data from female respondents) and comparing the sub-sample analyses to each other and to the analysis using data from all participants. Structural equation modeling analysis procedures were used to test all specified models by determining the degree to which the model as a whole fits the data, and then examining the strength and direction of relationships between the variables in the model.

A structural equation modeling procedure testing the original model with social desirability included did not fit the data well. Given so, the relationships between social desirability and the four variables in the original model were in the opposite direction than would be expected if participant responses were based on a socially desirable answer. Additionally, the amount of variance explained by social desirability was very small. However, when social desirability was removed from the original model and another structural equation modeling analysis conducted, the model still demonstrated poor fit.

At this point, the original model was altered by removing the path between perceived relationship quality and perspective taking, and adding paths leading from perceived

relationship quality to respective concerns: personal distress, and prosocial behavior, respectively. This alteration was performed because pet relationship quality was mutually correlated to perspective taking, and it was theorized that pet relationship quality might be directly related to the two emotional components of empathy as well as to prosocial behavior tendency. The resulting model was subjected to structural equation modeling analysis procedures and was found to fit the data well.

The altered model was trimmed because of very small magnitudes of contribution between pet relationship quality and respective concerns: pet relationship quality and personal distress, and between perspective taking and personal distress. By setting the regression coefficients weights of those three paths to zero, their respective effects were eliminated. The resulting model fit the data well and was not significantly different from the untrimmed model, indicating that equating the effects of the three paths was indeed appropriate. The constrained version of the trimmed model was taken as the best alternative to the original model. It was therefore used to address the two remaining research questions: whether participant gender or the type of pet identified by respondents as being emotionally closest to them would produce differential effects among the variables in the model.

A test of the gender research question involved re-analyzing the final model using data from females respondents only and comparing the results to those obtained by analyzing the final model using all participants' data (i.e. model using data only from male participants could not be analyzed due to an inadequate sub-sample size). Results showed that there was no significant difference between the overall fit of the two models, and the

the pattern of associations between corresponding variables within the two models did not significantly differ. The remaining research question was tested by analyzing the final model using data only from participants who indicated their closest pet relationship was with a dog, and comparing the results to the outcomes of an identical model using data from all participants (again, an insufficient number of sub-sample cases prevented analysis of a model based only on data from respondents who reported their closest pet relationship was with a animal other than a dog). As was the case for the respondent gender research question, this model did not fit the data significantly better or worse than the final model using data from all respondents, and corresponding associations between variables within both models were not significantly different.

Interpretation of the Results

Three of the five research questions involve continuous data and were therefore included in a correlation matrix along with the five variables from the hypothesized model. Two of these three research-question variables (subjective well-being and age of participant when their closest pet relationship occurred) were not related to any of the five variables in the hypothesized model. This suggests that these two research-question variables do not differentially affect any of the variables in the original model. On the other hand, social desirability was found to be significantly related to four of the variables in the hypothesized model, and was included in the tested path analyses along with the five variables comprising the hypothesized model. However, not only did this model not fit the data well, but the relationships between social desirability and the four variables of concern in the model were the exact opposite of the expected direction. Thus, it was

concluded that social desirability probably is not a confounding variable, and it was removed from subsequent analyses. The interpretation of the results involving the other two research questions is discussed later.

Analysis of the original model (without the inclusion of social desirability) revealed a relatively poor fit. Therefore, the hypotheses specifying the particular pattern of associations represented in the original model (Figure 1) was not supported. Furthermore, because the model as a whole did not fit the data well, it is inappropriate to interpret associations between individual variables within the model. Instead, the model was respecified based on both statistical and theoretical grounds.

From a statistical standpoint, only those self-rated associations within the model that were close to zero were tested for possible elimination. Initially, only one of the two paths meeting this criterion was considered for elimination: the association between pet relationship quality and perspective taking. Not only is pet relationship quality apparently strongly unrelated to perspective taking, but also the former variable does not seem to explain any of the variance in the latter.

From a theoretical perspective, it is both conceivable and acceptable to speculate that pet relationship quality has a direct relationship with prosocial behavior as well as being mediated by empathy (as originally hypothesized). Additionally, it is possible that although pet relationship quality is not related to perspective taking, it may be related to empathic concern and/or personal distress. While at first glance this latter suggestion appears to be at odds with the original theoretical stance about the sequential nature of empathy (beginning with a cognitive reaction and progressing to a prosocial act),

positive or negative emotional experience) is now not in doubt for the alternative view. The conceptualization of empathy as being comprised of three sub-factors that follow a particular sequence refers to situational concerns. However, the present study is concerned with personality traits rather than personality states. Since personality dispositions are, by definition, stable over time, attempting to determine the temporal nature of their relationships may be a waste of effort. Thus, a disposition toward having a particular level of emotional attachment to pets may be related to a disposition toward empathic concern or personal distress, but the direction of the association may be arbitrary.

The aforementioned statistical and theoretical reasoning guided the alteration of the original model to the one depicted in Figure 5. This altered model specified the same pattern of relationships found in the original model except that the path between pet relationship quality and perspective taking was deleted, and paths were added to represent a direct relationship between pet relationship quality and empathic concern, personal distress, and prosocial behavior, respectively. Although a path analysis showed that this model fit the data very well, two of the parameters within the model (one between pet relationship quality and personal distress, and one between pet relationship quality and empathic concern) were so close to zero that they did not need to remain in the model. Thus, these two paths were constrained to zero so that they would no longer be estimated freely, and their effects would be dismissed. An additional path, between perspective taking and personal distress, was also constrained to zero due to the low strength of the association and to the stable nature of personal distress, accounted for by perspective taking.

The constrained model fit the data very well, and was not significantly different from the unconstrained version (implying that placing the constraints on the model had no adverse effect on the fit characteristics of the model as a whole). Because of this—and since no other shortcom to this model were deemed necessary—the relationships between the remaining variables within this particular model can be interpreted with an acceptable level of confidence. Several observations can be made about the nature of this final model.

Probably the most striking aspect of the final model (Figure 1) is that *per* relationship quality is not associated with any of the components of empathy (α a perspective taking, empathic concern, personal distress). Therefore, the previous study hypothesis concerning empathy as a mediating factor between *per* relationship quality and prosocial behavior tendency is not supported. One possible explanation for this outcome (*per* built themselves) has to do with the way in which *per* relationship quality was measured.

As delineated in the methods chapter, a factor analysis of the items on the Lexington Attachment to Pets Survey (the instrument used to assess *per* relationship quality) indicated that the first factor (labeled *General Attachment*) accounted for almost 40% of the overall variance, which is substantially more than the variance accounted for by the other two factors (roughly 15% and 15% respectively). Thus, the instrument appears to measure conventional attachment qualities (such as trust, companionship, bonding, affection, and so on) rather than relationship quality characteristics reflective of empathy (α increased perspective taking and empathic concern, and decreased personal distress). Indeed, virtual proportion of the individual items on the Lexington Attachment to Pets

Survey confirms this notion—some of the items within relationship issues involving perspective taking, empathic concern, or personal distress. Had the instrument measuring pet relationship quality included items measuring the three components of empathy, pet relationship quality as a variable might well have been related to the three sub-components of empathy used in this study.

Another possible reason for not finding a correlation between pet relationship quality and empathy pertains to the fact that the pet relationship participants were asked to refer to when completing the quality of pet relationships instrument were not necessarily current relationships.¹ It is plausible that an individual's level of dispositional empathy might vary over relatively long time-periods (such as years), especially during pet-relatedness. Therefore, for the majority of respondents in the present study, their level of trait empathy at the time their chosen pet relationship occurred could have been different than it was at the time data were collected.

A third potential reason for the lack of association between pet relationship quality and empathy is that almost all of the pet relationship respondents referred to when calculating their general level of pet relationship quality were reported as being very close. Indeed, only about 10% ($n = 10$) indicated that their reference pet relationship was fairly close, while another 10% ($n = 17$) reported that the relationship was either moderately close, a little close, or not that at all. The implication is that the full spectrum of pet

¹Visual inspection of the data indicates that only about one third of respondents reported that their chosen pet relationship were current at the time data were collected.

relationship quality was not represented in this sample.² If the distribution of the pet relationship quality variable had encompassed a greater percentage of lower quality relationships with pets, there might have been a connection between pet relationship quality and empathy.

A second observation about the final model is that even though empathy does not mediate an association between pet relationship quality and prosocial behavior tendency, there is a direct correlation between pet relationship quality and prosocial behavior tendency. Although the magnitude of this association is relatively small ($\beta = .113$), the finding is nonetheless important. Only one other research study (Vidaver, Samal, & Braken, 1999) has found evidence of this type of a connection. In their study of 428 fourth-, sixth-, and eighth-graders, Vidaver, Samal, and Braken found that dog owners had significantly higher levels of prosocial orientation than did non-owners, and participants having closer relationships with their dogs or cats scored significantly higher on prosocial orientation than did participants who had lower-quality relationships with their pet dogs or cats. Thus, the present study lends additional support to the proposition that higher-quality relationships with pet animals is associated with an increased tendency toward prosocial behavior.

In terms of the relationships between the three factors of empathy examined in the final model, two observations can be made. First, perspective taking is strongly and

²The skewed nature of this variable is an artifact of the research design, because respondents were instructed to select their closest pet relationship as a reference for completing the pet relationship quality inventory.

positively related to empathic concern (see Figure 5), as was hypothesized. Indeed, perspective taking appears to explain about one-third of the variance in empathic concern, which implies that this construct is of practical importance as well (i.e., it is not merely a statistical artifact resulting from, for example, a large sample size). This finding strongly supports much of the research on the cognitive and emotional components of empathy (e.g., Batson, 1987a; Batson, Fultz, & Schoenrade, 1987; Batson, Fultz, Schoenrade, & Polman, 1987; Cohn, Batson, & McDermott, 1986; Davis, 1983, 1983a, 1983b, 1983c; Johnson-Clark, & Swisher, 1980; Sittliff, Dillard, Soetens, Kim, & Wright, 1989).

A second observation about the manner of the associations among the three elements of empathy related to each other in the present study is that perspective taking is largely unrelated to personal distress (see Figure 4). This is contrary to the prediction that perspective taking would be inversely and moderately related to personal distress. A possible explanation for this particular outcome may be derived from early theoretical speculation that empathy involves an initial negative appraisal component followed by some form of emotional reaction (e.g., Cohn, Batson, & McDermott, 1986; Davis, 1983).² It is possible that increased perspective taking results in an emotional response that is almost exclusively positive, as appears to be the case in the present study. At least one prominent researcher (Batson, 1987a, 1987) agrees, pointing that personal distress is not

² Later researchers (e.g., Davis, 1983, 1983a, 1983b, 1983c; Sittliff, Dillard, Soetens, Kim, & Wright, 1989) redefined the emotional component of empathy as predominantly positive (sympathetic concern) or negative (personal distress).

related to empathy, and thus is not associated with either perspective taking or empathic concern. Additionally, a study by Carlo, Allen, and Peterson (1992) found that while perspective taking was related to empathic concern, it was not related to personal distress (the identical pathway found by the present study). Finally, one structural equation model, which was run using the present study's data found only a small, positive correlation between personal distress and empathic concern ($r = .15$), and another variable explained more than 75% of the variance in the other variable.^a

Two additional observations can be made about the final model (Figure 3). First, empathic concern is positively related to prosocial behavior (albeit only moderately so), as was hypothesized. This finding provides additional, modest support to the findings of the vast majority of research studies investigating the link between empathic concern and prosocial behavior (e.g., Asch, 1950; Dar-Latan, Gelfand, Davis, & Pineson, 1981; Batson, 1991; Batson, Dierker, Ashkanas, Buckley, & Roth, 1991; Batson, Dyck, Bruch, & Petron, 1994; Batson & Shaw, 1991; Batson & Moran, 1999; Batson & Wells, 1989; Carlo, Hunsberg, Taylor, Santos, & Speer, 1994; Carlo, Batson, & McInerney, 1998; Davis, 1983b, 1983c; Dawkins, Allen, & Schneider, 1998; Fultz, Batson, Fortinckeb, McCarthy, & Varney, 1984; Fan & Batson, 1992). In fact, this particular finding is probably the most consistent and strongest outcome in the empathy-prosocial behavior research field.

^a This model was not presented in the results section because it did not fit the study hypotheses and did not add any useful information to the final model.

The last observation concerning the final model is that personal distance is strongly and inversely associated with prosocial behavior tendency, as was predicted. However, the strength of the relation between personal distance and prosocial behavior tendency must be downplayed because part of the prosocial behavior tendency measurement is derived from the inverse of the measurement of personal distance. Nevertheless, some studies have found the same inverse association (e.g., Carls, Elmslooy, Tappin, Swales, & Spear, 1994; Davis, 1980b). Further, a study by Elmslooy, Friess, Milne, Fehr, Shill, Mealy, and Rens (1999) found similar results in that a physiological measure of personal distance was significantly and inversely related to prosocial behavior intention.

The remaining two research questions were answered using the final model (Figure 1). One of the research-questions was concerned with possible model differences relative to gender. A path-analysis using data only from female participants indicated that corresponding path coefficients within the two respective models were not significantly different. However, almost two thirds of the total sample were female, and a corresponding path analysis using data only from male participants could not be conducted due to an inadequate number of cases. As a result, this research-question cannot easily be answered, because in order for there to be a significant difference between the female-only analysis and the all-participants analysis, there would have had to have been extreme differences in the way male participants responded to the assessment (relative to the way female participants responded). Since a males-only analysis would have been valid, the only interpretation that can be safely made is that

as a group: males did not respond in an extremely different manner than did females (but they might have differed at a statistically or practically significant level).

The third research question had to do with whether or not the type of closest relationship reported being closest to (non-romantic) resulted in significantly different effects than if type of pet was ignored. The only sub-sample large enough for valid analysis consisted of data from participants who reported their closest relationship was with a dog. A path analysis of this model showed that the path coefficient representing the association between perspective taking and empathic concern was slightly higher than the corresponding path coefficient in the model using all participants' data. However, this difference was not significant. Unfortunately, as was the case with the gender research question, almost exactly two-thirds of the participants indicated their closest relationship was with a dog. Therefore, while it might appear that having a dog as one's closest pet relationship does not result in a different pattern of effects than if pet-type is not considered, there is no way of being sure of this at present time.

Limitations of the Study

One limitation of this study was the use of single indicator self-report measures for all variables measured. Self-report measures using a forced-choice format format cannot capture the depth and breadth of participant data as can methods such as open-ended questionnaires or interviews. Additionally, respondents often take great care self-report measures so as to appear more socially acceptable (hence the need for the social desirability measure). Even if participants do not respond with a social desirability bias, their self-reports may well differ from their actual behavior. And further, multiple

members of each individual's family (especially if the measurement are of differing formats) would obviously provide more accurate data.

Another limitation of this study involves its cross-sectional design. Although personality dispositions are generally believed to be stable over time, it is a logical possibility so that they are fluid in the short run. Thus, cross-sectional data on personality traits is somewhat akin to using one frame of a video to represent the entire video: the overall motion—and its nuances and complexity—of the personality trait cannot be captured by a cross-sectional assessment. Further, cross-sectional data on a cross-sectional age group (such as undergraduate students) may be confounded by the cohort effect, which has to do with factors (such as culture, history, the environment, or social context) common to most individuals in a particular age group.

A third important limitation is in the definitions used for pet relationship quality and prosocial behavior. Pet relationships are extremely diverse, as are the types of pets people have relationships with. Relationships with dogs alone vary considerably as a function of such things as the dog's breed, its "personality," the personalities of the persons interacting most with the dog, the environment, and the reasons for having a dog. The pet relationship quality measure in this study primarily tapped emotional intimacy. Other aspects of relationships with pets are also important, such as relationship duration, frequency of interaction, number of relationships (pet and total and over time), and so on.² Also, as mentioned earlier, the pet relationship inventory used in the present study does

²Although some of this type of data was collected, it was beyond the scope and extent of this study to include all of it in the analyses.

and stress relationship mean pertaining to the three domains of empathy. As with the theoretical construct of pet relationship quality, prosocial behavior is a very broad term, including (but not limited to) planned or organized volunteering, helping in crisis situations, providing voluntary assistance with major difficulties, and donating money.

Finally, although the original model (Figure 1, page 3) specified a uni-directional and unipolar model, it is quite possible that the three major constructs being studied (pet relationship quality, empathy, and prosocial behavior) are related in a more complex manner such as reciprocal associations. As indicated earlier, it is reasonable to assume that personality traits might relate in ways that are different from *r* relational variables alone were being studied.

Suggestions for Future Research

A primary suggestion for future study on this topic is that more than one assessment be used for each variable being studied. Multiple measures provide a much more comprehensive representation of constructs, which increases the accuracy of the results. It is also recommended that other types of assessment be employed, such as observations, interviews, and even physiological measures. Another suggestion for future research is the use of a longitudinal design, which is a much more powerful than the cross-sectional design used in the present study. Such a design would also have the advantage of assessing the ways in which a person's relationship with one pet changes over the duration of the relationship as well as the similarities and differences across more-than-one relationship.

Another suggestion for future research involves the assessment of method used to measure pet relationship quality. Rather than merely assessing general attachment to pet, pet relationship issues pertaining to empathy must be addressed, either by self-report inventory, or by interviewing participants. The following are examples of possible items for inclusion on an inventory. Items addressing perspective taking might read: "I can tell the difference between the various things my pet wants or needs (e.g., water, food, a walk, a treat, attention, go to the bathroom)," or "Sometimes my pet smiles or laughs." The items directed at measuring empathic concern could read: "I wish I could make my pet not feel anxious or scared when I take him or her to the veterinarian for a check up." Items measuring personal distress would be reverse scored in accordance with Davis' (1983, 1986) conceptualization of empathy. Items in this category might read: "Sometimes when this cat has to take my pet to the veterinarian, because I can't bear to see my pet scared or in pain," or "Whenever my pet gets hurt, I panic and become paralyzed."

Future research on this topic should include measures of a wider range of pet relationship quality. The present study focused primarily on very close relationships with pets, which may have adversely affected the results by providing a one-dimensional representation of pet relationship across the spectrum. Thus, by collecting data on pet relationships ranging from a lack of emotional attachment to very close emotional attachment, a more complete and thorough picture would be developed. This might well provide for stronger correlations between pet relationship quality and empathy.

Finally, the definitions of pet relationship quality and prosocial behavior used in the present study may have been too broad. Although necessarily narrowing the

definition of *attachment variables* reduces generalizability of the findings: some additional specification is recommended for future studies on this topic. For example, as mentioned earlier, the focus of the pet relationship quality assessment could be narrowed somewhat to highlight the aspects of relationships with pets that pertain to *empathy*. Additionally, the construct of prosocial behavior might be restricted to only include formal volunteering opportunities, or helping behavior within the home, or the provision of social support.

Implications of the Study

Although the present study's hypotheses were only partially substantiated, the results do have several important implications. First and foremost, even though the association between pet relationship quality and prosocial behavior tendency is somewhat small, having a close attachment to a pet dog or cat (the two predominant pets in the present study's sample) may well be beneficial in terms of promoting prosocial behavior. The numerous advantages of having a high-quality relationship with a pet have already been well-documented by prior research: this particular finding adds yet another possible benefit.

A second set of implications stems from the strong correlation between perspective taking and empathic concern, and the moderate association between empathic concern and prosocial behavior. The training process for psychotherapists usually includes the development and enhancement of empathy toward clients as an efficient way to build trust and establish rapport. The present study indicates that this training process should include cognitive perspective taking skills as well as emotional empathic concern skills.

An additional benefit of this process may be that the students become more prosocial as well.

Results training psychopathology to be most cooperative therapists often seek to process empathy among their clients (especially those whose lack of empathy appears to be the major problem – for instance, when violence is a serious issue). The results from the present study suggest that by teaching clients to take another's perspective and, in essence, "put oneself in another's shoes," clients may well develop increased empathic concern for others and even demonstrate increased prosocial behavior. Further, based on the present study's finding of a strong positive association between personal distress and prosocial behavior tendencies one important aspect of the field of therapeutic interventions would be to focus on reducing personal distress in situations wherein prosocial behavior is desired.

Despite the lack of support in the present study's results for a connection between an emotionally close relationship with a pet and perspective taking, there is no reason to believe that such an association does not exist. Indeed, if the instrument used to assess pet relationship quality had included items pertaining to empathy, this predicted association probably would have been found. Regardless, teaching children (and possibly adults) to take their pet's perspective would undoubtedly increase their empathic concern for the pet and possibly increase their prosocial treatment of the pet as well. Even if the increased empathy and prosocial behavior did not generalize to other humans (which it probably would), teaching perspective taking via a via pet is obviously a good practice

Animal applications based on the premise that teaching empathy toward animals would at least promote better treatment of animals prior to psychosocial/medical programming (such as is provided by humane societies, animal shelters, the American Society for the Prevention of Cruelty to Animals, Project KIDZ, Project WILD, the Delta Society, and so on). These groups could add a component to their programming that focuses specifically on taking animals' perspectives, being more compassionate toward animals, and learning to reduce distressed feelings in certain situations involving animals. Based on the present study's findings, this kind of teaching would likely translate into more positive treatment of animals.

Finally, animals are already used in a wide variety of situations for therapeutic reasons. In most instances, however, these relationships are relatively brief, which precludes the formation of an ongoing, consistently close, and reciprocal relationship with the pet. However, those persons who have already experienced a close relationship with a pet would be "primed" to obtain the maximum possible benefit from these brief encounters. Therefore, it makes good sense to promote the development of close relationships with pets as a matter of routine, especially among young or pet-reliant children.

Conclusions

As a whole, the original model hypothesizing an association between pet relationship and prosocial behavior mediated by three factors of empathy was not supported. Indeed, pet relationship-quality was not found to be correlated with any of the three empathy components (perspective taking, empathic concern, and personal distress).

Nevertheless, by sharing and then testing the original model, support was found for some aspects of the original model, and one unexpected relationship was revealed. The unexpected finding consists of a moderately small, direct association between *per relationship quality* and *prosocial behavior*. Hypothesized relationships that were supported include a strong, positive association between *perspective taking*, a moderate, positive correlation between *empathic concern* and *prosocial behavior tendency*, and a very strong, negative relationship between *personal distress* and *prosocial behavior tendency*.

The finding that *perspective taking* is associated with *empathic concern* supports some of the research on the multidimensional nature of empathy. The strong, positive correlation that was found between *empathic concern* and *prosocial behavior tendency*, parallels much of the research on the empathy-prosocial behavior connection, whereas the negative association between *personal distress* and *prosocial behavior tendency* departs from only some of the research in that field. Finally, only one other study has found similar results to the modest, direct association that was revealed between *per relationship quality* and *prosocial behavior*, although that study used children as participants.

Although the existence of a pattern of interrelationships between *per relationship quality*, *empathy*, and *prosocial behavior tendency* seems obvious, little research evidence exists to support it, at this time because few researchers have attempted to study all of these variables at once. The present study's findings do lend support for some aspects of this notion but also appear to suggest that variables other than *per relationship quality* are better predictors of *dispositional prosocial behavior*. It is obvious that there is a need for

further investigation using longitudinal research designs, more refined perinatal/relationship quality measurement techniques, and multiple measurements of each variable.

In the final analysis, however, the most important findings from the present study include associations between perspective taking and empathic concern, empathic concern and prosocial behavior, and an inverse correlation between personal distress and prosocial behavior. Although these particular findings were not the focal point of the present study, their importance should not be underestimated in terms of the implications for training psychologists to be more empathic toward their clients. Improving empathy is critical in a psychotherapeutic intervention, promoting empathic treatment of animals in psychoeducational programming scenarios, and enhancing the child-development process by facilitating empathic treatment of pets within the household.

APPENDIX A
QUESTIONNAIRES

Demographic Questionnaire

1. Circle your college level:

Freshman Sophomore Junior Senior Graduate

Other (please specify) _____

2. What is your college major? _____

3. What is your date of birth? _____

4. Circle your gender: Male Female

5. Circle your race/ethnicity:

African-American Caucasian Hispanic Asian American Indian or
Alaskan Native

Other (please specify) _____

Interpersonal Reactivity Index

The following statements inquire about your thoughts and feelings in a variety of situations. Using the answer scale, indicate how well each item describes you by circling the appropriate number under answer sheet. Read each item carefully before responding. Answer as honestly as you can; there are no right or wrong responses.

ANSWER SCALE

1

(DOES NOT
FIT AT ALL)
NOT WELL

2

3

4

(DESCRIBES
ME VERY
WELL)

- 1 I sympathize and fantasize, with some regularity, about things that might happen to me
- 2 I often find myself concerned/bothered for people less fortunate than me
- 3 I sometimes find it difficult to see things from the "other person's" point of view
- 4 Sometimes I don't feel very sorry for other people when they are having problems
- 5 I really get involved with the feelings of the characters in a novel.
- 6 In emergency situations, I feel apprehensive and ill at ease
- 7 I am usually objective when I watch a movie or play, and I don't often get completely caught up in it.
- 8 I try to look at everybody's side of a disagreement before I make a decision
- 9 When I see someone being taken advantage of, I feel kind of protective towards them
- 10 I sometimes feel helpless when I am at the middle of a very emotional situation
- 11 I sometimes try to understand my friends better by imagining how things look from their perspective
- 12 Encountering someone who's afraid just makes me somewhat more like me.
- 13 When I am worried, I don't think of other folks
- 14 Other people's misfortunes do not usually disturb me a great deal.
- 15 If someone has right about something, I don't waste much time listening to other people's arguments.
- 16 After a movie, play, or novel, I have felt as though I were one of the characters
- 17 Being on either the small or the large side makes no difference
- 18 When I am worried, I sometimes don't feel very much pity for them
- 19 I am usually pretty effective in dealing with emergencies
- 20 I am often quite touched by things that I see happen
- 21 I believe that there are two sides to every question and try to look at them both
- 22 I would describe myself as a pretty well-balanced person.
- 23 When I watch a good movie, I can very easily put myself in the place of a leading character
- 24 I tend to lose interest during emergencies
- 25 When I suspect of someone, I usually try to "put myself in his shoes" for a while
- 26 When I am feeling an interesting story or novel, I imagine how I would feel if the events in the story were happening to me
- 27 When I see someone who badly needs help in an emergency, I go in place.
- 28 Before entering something, I try to imagine how I would feel if I were in that place

Animal Relationships Questionnaire

Part I:

Please give the following information about all of the pets you have owned or own now, and all of the pets that were (or are) owned by another member of your family. Also include any pets you can remember that were (or are) owned by your extended family, friends, neighbors, etc. In other words, list all of the pets you can remember that were (or are) part of your life in some way. (Ignore the **6** column for now.)

Pet's Name (Please print and do not abbreviate)	Type and Breed of Animal (If you prefer, list probable date, approximate, instead)	Pet's Gender (Circle One)	Who Owned the Pet? (You, someone within household, neighbor, etc.)	Your Approximate Age When Pet Entered Your Life	Approximate Length of Time Pet was in Your Life (in years)	6
_____	_____	Male / Female /	_____	_____	_____	_____
_____	_____	Male / Female /	_____	_____	_____	_____
_____	_____	Male / Female /	_____	_____	_____	_____
_____	_____	Male / Female /	_____	_____	_____	_____
_____	_____	Male / Female /	_____	_____	_____	_____
_____	_____	Male / Female /	_____	_____	_____	_____
_____	_____	Male / Female /	_____	_____	_____	_____
_____	_____	Male / Female /	_____	_____	_____	_____
_____	_____	Male / Female /	_____	_____	_____	_____
_____	_____	Male / Female /	_____	_____	_____	_____
_____	_____	Male / Female /	_____	_____	_____	_____
_____	_____	Male / Female /	_____	_____	_____	_____
_____	_____	Male / Female /	_____	_____	_____	_____
_____	_____	Male / Female /	_____	_____	_____	_____
_____	_____	Male / Female /	_____	_____	_____	_____
_____	_____	Male / Female /	_____	_____	_____	_____
_____	_____	Male / Female /	_____	_____	_____	_____
_____	_____	Male / Female /	_____	_____	_____	_____

Now, go back and rate how consciously close you were (or are) to each of the pets you listed, using the scale below (put your ratings in the **6** column).

1
Not At
All Close

2
Only a
Little Close

3
Somewhat
Close

4
Fairly
Close

5
Very
Close

Finally, circle the rating number of your closest pet relationship (even if none of the pets are rated as a "5," "4," or "3," or if more than one pet is rated as a "5," "4," or "3" (you must choose one and indicate pet as your closest).

Animal Relationships Questionnaire (continued)

Part 1:

Below are a number of statements about relationships with pets. Using the answer scale below, decide how well each item described (or described) your most meaningful relationship with the particular pet you indicated on the previous page was (or *is*) your choice. Then circle the appropriate number on the answer sheet. Answer as honestly as you can; there are no right or wrong responses.

ANSWER SCALE

0	1	2	3
STRONGLY DISAGREE	SOMEWHAT DISAGREE	SOMEWHAT AGREE	STRONGLY AGREE

1. That particular pet meant (or means) more to me than any of my friends.
2. Quite often I minded (or resented) its that particular pet.
3. I believed (or believed) that particular pet was (or was) best friend.
4. Quite often, my feelings toward people were (or are) affected by the way they reacted (or reacted) to that particular pet.
5. I loved (or love) that particular pet because he/she was (or is) more loyal to me than most of the people in my life.
6. I enjoyed (or enjoy) showing other people pictures of that particular pet.
7. I thought (or think) that particular pet was (or was) just a pet.
8. I loved (or love) that particular pet because it never judged (or judges) me.
9. That particular pet knew (or knows) when I was (or was) feeling bad.
10. I often talked (or talk) to other people about that particular pet.
11. That particular pet understood (or understands) me.
12. I think, having (or have) that particular pet helped (or helps) me stay healthy.
13. That particular pet and I had (or have) a very close relationship.
14. I would have done (or would do) almost anything to take care of that particular pet.
15. I played (or play) with that particular pet quite often.
16. I considered (or considered) that particular pet to be a total companion.
17. That particular pet made (or makes) me very happy.
18. I considered (or considered) that particular pet as part of my family.
19. I was (or was) not very attached to that particular pet.
20. I considered (or considered) that particular pet to be a friend.

Part 2:

Using the answer scale below, decide how well each of the following items describes your attitudes about pets. Indicate your answer by circling the appropriate number on the answer sheet. There are no right or wrong responses.

ANSWER SCALE

0	1	2	3
STRONGLY DISAGREE	SOMEWHAT DISAGREE	SOMEWHAT AGREE	STRONGLY AGREE

21. I believe that pets should have the same rights and privileges as family members.
22. Pets deserve as much respect as humans do.
23. Owning a pet adds to my happiness.

Personal Personality Battery

Below are a number of statements which may or may not describe you, your feelings or your behavior. Using the answer scale below, indicate how well each item describes you by circling the appropriate number on the answer sheet. Answer as honestly as you can. There are no right or wrong responses.

ANSWER SCALE

1
STRONGLY
DISAGREE

2
DISAGREE

3
UNCERTAIN

4
AGREE

5
STRONGLY
AGREE

- 1 When people are easy to use, I feel very little responsibility to treat them well
- 2 I would feel less bothered about knowing later on a dirty joke than at a clean one
- 3 No matter what a person has done to us, there is no excuse for taking advantage of them
- 4 While the pressure for grades and the widespread cheating in school is wrong, the individual who cheats occasionally is not really so much at fault
- 5 It doesn't make much sense to be very concerned about how we act when we are with and being sensitive
- 6 If I think a situation through carefully, I would feel less guilty if it was already damaged before I used it
- 7 When you have a job to do, it is impossible to look over the shoulder of your superior
- 8 I sometimes find it difficult to see things from the "other guy's" point of view
- 9 When I see someone being taken advantage of I feel kind of protective towards them
- 10 I sometimes try to understand my friends better by comparing how things look from their perspective
- 11 Other people's mistakes do not usually disturb me as much as I should
- 12 If I'm sure I am right about something, I don't waste much time worrying or what people's opinions
- 13 When I see someone being treated unfairly I sometimes don't feel very much pity for them
- 14 I am usually pretty objective in dealing with disagreements
- 15 I am often quite shocked by things that I see happen
- 16 I believe that there are no sides to every question and try to look at them both
- 17 I tend to be bothered during disagreements
- 18 When the system is wrong, I usually try to "put myself" in it rather than in a whole
- 19 When I see someone who badly needs help or an emergency, I go to person,

Personal Personality Battery (Continued)

Part 2

Below are a set of statements that may or may not describe how you make decisions when you have to choose between two courses of action or alternatives when there is no clear right way or wrong way to act. Some examples of such situations are: being asked to lend something to a close friend who may forget to return things; deciding whether you should keep something you know was for yourself or share it with them; and choosing between studying for an important exam and visiting a sick relative. Using the answer scale, indicate how well each item describes you by circling the appropriate number on the answer sheet. Answer as honestly as you can; there are no right or wrong responses.

ANSWER SCALE:	1	2	3	4	5
	STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE

26. My decisions are usually based on my concerns for other people.
27. My decisions are usually based on what is the most fun and just way to act.
28. I choose alternatives that are intended to hurt everybody I meet.
29. I choose a course of action that misadvises the help other people receive.
30. I choose a course of action that considers the rights of all people involved.
31. My decisions are usually based on concerns for the welfare of others.

Part 3

Below are several different actions in which people sometimes engage. Read each of them and decide how frequently you have started acted on the past. Using the answer scale, indicate how often you have performed each activity by circling the appropriate number on the attached answer sheet. Answer as honestly as you can; there are no right or wrong responses.

ANSWER SCALE:	0	1	2	3	4
	NEVER	RARELY	SOMETIMES	OFTEN	VERY OFTEN

32. I have helped carry a stranger's belongings (e.g., books, groceries, parcels, etc.).
33. I have allowed someone to go ahead of me in a line (e.g., shopping, copy machine, etc.).
34. I have let a neighbor whom I don't know too well borrow an item of mine (e.g., tools, clothes, my car, etc., or personal equipment, etc.).
35. I have helped being asked, voluntarily lent out a neighbor's car or clothes without being paid for it.
36. I have offered to help a handicapped or elderly stranger across a street.

Marlene Cronan Social Desirability Scale (Short-Form)

The following statements represent about your thoughts, feelings, and behavior in a variety of situations. Please indicate whether or not each item describes you by marking "True" or "False" on the answer sheet. Answer as honestly as you can; there are no right or wrong responses.

- 1 I never hesitate to go out of my way to help someone in trouble.
- 2 I have never seriously doubted anyone.
- 3 I sometimes feel resentful when I don't get my way.
- 4 There have been times when I felt like rebelling against people in authority even though I knew they were right.
- 5 I can remember "playing safe" to get out of something.
- 6 When I don't know something I don't mind just admitting it.
- 7 I am always courteous, even to people who are disagreeable.
- 8 I would never think of letting someone else be punished for my wrong-doings.
- 9 There have been times when I was quite jealous of the good fortune of others.
- 10 I am sometimes irritated by people who ask favors of me.

The Affection Behavior Scale

Please answer each question by circling either "Yes" or "No" on the answer sheet. Answer as honestly as you can; there are no right or wrong responses.

During the past five weeks, did you ever feel

- 1 particularly excited or interested in something?
- 2 so certain that you would do things as a cheer?
- 3 proud because someone complimented you on something you had done?
- 4 very lonely or separate from other people?
- 5 pleased about having accomplished something?
- 6 bored?
- 7 on top of the world?
- 8 either depressed or very happy?
- 9 that things were going your way?
- 10 upset because someone criticized you?

APPENDIX B INFORMED CONSENT

Informed Consent Proposed Title: People and Their Pets Survey

Please read this consent document carefully before you decide to participate in this study.

Purpose of the Research Study

The purpose of this study is to examine the nature of relationships between people and their pets, and the effects those relationships have on people.

What you will be asked to do in this study:

You will be asked to respond to a demographic questionnaire and several other questionnaires about your relationships with pets, and your attitudes, feelings, thoughts, and behavior in a variety of situations.

Time Required:

About 10 minutes

Risks and Benefits:

There are no anticipated risks or benefits involved with completing the survey.

Compensation:

If you participate in this study, you will receive 1 point toward a possible 100 course points.

Confidentiality:

Your identity will be kept confidential to the extent provided by law. Your information will be assigned a code number, but your name will not be associated in any way with this code number. All demographic information collected will be analyzed and reported in aggregate form.

Voluntary Participation

Your participation in this study is completely voluntary. There is no penalty for not participating. This study is not part of the school's class work or requirements. Additionally, the nature of this study is in no way involved with the research. You do not have to answer any of the survey questions you do not wish to answer.

Right to Withdraw from the Study:

You have the right to withdraw from the study at any time without consequence.

Where to Contact If you have Questions about the Study:

Professor Desmond Anderson-Stadler, Department of Psychology (Counseling Psychology Program), (850) 464-1758, desmond@ufl.edu

Carolyn M. Dutton PhD (Counseling Psychology), (850) Psychology (303) 952-0804 X2399

Where to Contact about Your Rights as a Research Participant in this Study:

UFDS Office, Box 111150, University of Florida, Gainesville, FL 32611-2256, (352) 392-0403

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BIOGRAPHICAL SKETCH

Fredrick Fairfield Demond was born in Accra, Ghana, West Africa, on January 20, 1958. In 1973 he graduated from high school at Ghana International School and moved to the United States to attend college, first at Daytona Beach Community College, and then at the University of West Florida. Fredrick received his Bachelor of Arts degree in psychology from the University of West Florida in June 1977 and then moved to Gainesville, Florida. He entered the counselor education program at the University of Florida during the summer of 1980, earning Master of Education and Specialist in Education degrees in May 1984.

In August 1985, Fredrick entered the counseling psychology program at the University of Florida, training in marriage and family counseling. His pre-doctoral internship was completed in 1991 at the University of Florida Student Counseling Center. After completing his doctoral degree, Fredrick plans to teach and provide counseling services at the community college level.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy


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I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy


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